

**U.S. Department of the Interior
Bureau of Land Management**

**Big Springs Assessment
Dickshooter Use Area
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Dickshooter Use Area

Livestock Management

Allotment and Pasture Boundaries

The Dickshooter Use Area contains two main pastures, 8 South (8S) and 8 North (8N). Division fences, gap fencing and natural barriers facilitate independent management of Pastures 8S and 8N. Fencing around the Big Springs Ranch base property, in conjunction with rimrock along Big Springs Creek, allows an additional degree of separation between the southwest and northeast portions of Pasture 8N. Pasture boundaries for the Dickshooter Cattle Co. (DCC) Use Area are shown below (Figure 1). The fringes of Pasture 8S bordering the Battle Creek canyon are now within the Owyhee River Wilderness designated by Congress in 2009.

Season of Use, Grazing System, and Phenological Events

Season of Use

The permitted period of use is April 1 to September 30 with no season of use restrictions for either pasture. Their actual season of use often begins in May and ends as early as mid-August because conditions can be too wet in the spring and water sources dry out early at the end of the season. In recent years, a portion of the cattle initially turned out in the adjoining Northwest Allotment is moved into the DCC Use Area at turnout. There is no grazing system specified, however, a 4-inch end of growing season stubble height requirement is part of the 1999 DCC permit for Big Springs Creek within Pasture 8N.

Grazing System

Cattle were generally turned out in April to Pasture 8S during the 1980's and early 1990's. Since purchase by Dickshooter Cattle Co. in 1995, turnout has usually occurred in May, and cattle remain through May, June, and early July in most years. Pasture 8S has been rested twice in recent years, in 2008 and 2012. In Pasture 8N, cattle use occurs in July in the portion of the pasture lying south and west of Big Springs Creek. Cattle are usually removed to private property on the Big Springs Ranch around the end of July. When water and forage availability allow, a portion of Pasture 8N that lies north and east of Big Springs Creek is utilized in August and September. Dry Creek Reservoir, Big Springs Creek, and a livestock crossing area from Northwest Allotment (previously identified as a water gap) into Battle Creek are major water sources for that late summer use. These are supplemented by storage in pit reservoirs in basin bottoms and below rims where snowbanks accumulate and by two springs near the Battle Creek Ranch base property. In dry years such as 2012 and 2013, both turnout and removal of livestock may occur earlier in the season, with greatly reduced amounts of use.

Phenological Events

Two phenological zones occur within the Dickshooter Cattle Co. Use Area. These are the Late Spring Use Area and the Early Summer Use Area, as defined by the Boise District Phenology Study that was completed in 1968.

Late Spring Use Area (4,700 to 5,600 feet elevation)

In the Late Spring Use Area, the critical growth period for bluebunch wheatgrass (*Pseudoroegneria spicata*), Indian ricegrass (*Acnatherum hymenoides*), needle-and-thread (*Hesperostipa comata*), and Idaho fescue (*Festuca idahoensis*) occurs during late-May. The critical growth period for Thurber needlegrass (*Acnatherum thurberianum*) is similar to that of Idaho fescue, although needlegrass tends to stay green later. The critical growth period for squirreltail (*Elymus elymoides*) occurs in mid-May. The critical growth period for Sandberg bluegrass (*Poa secunda*) occurs during early May.

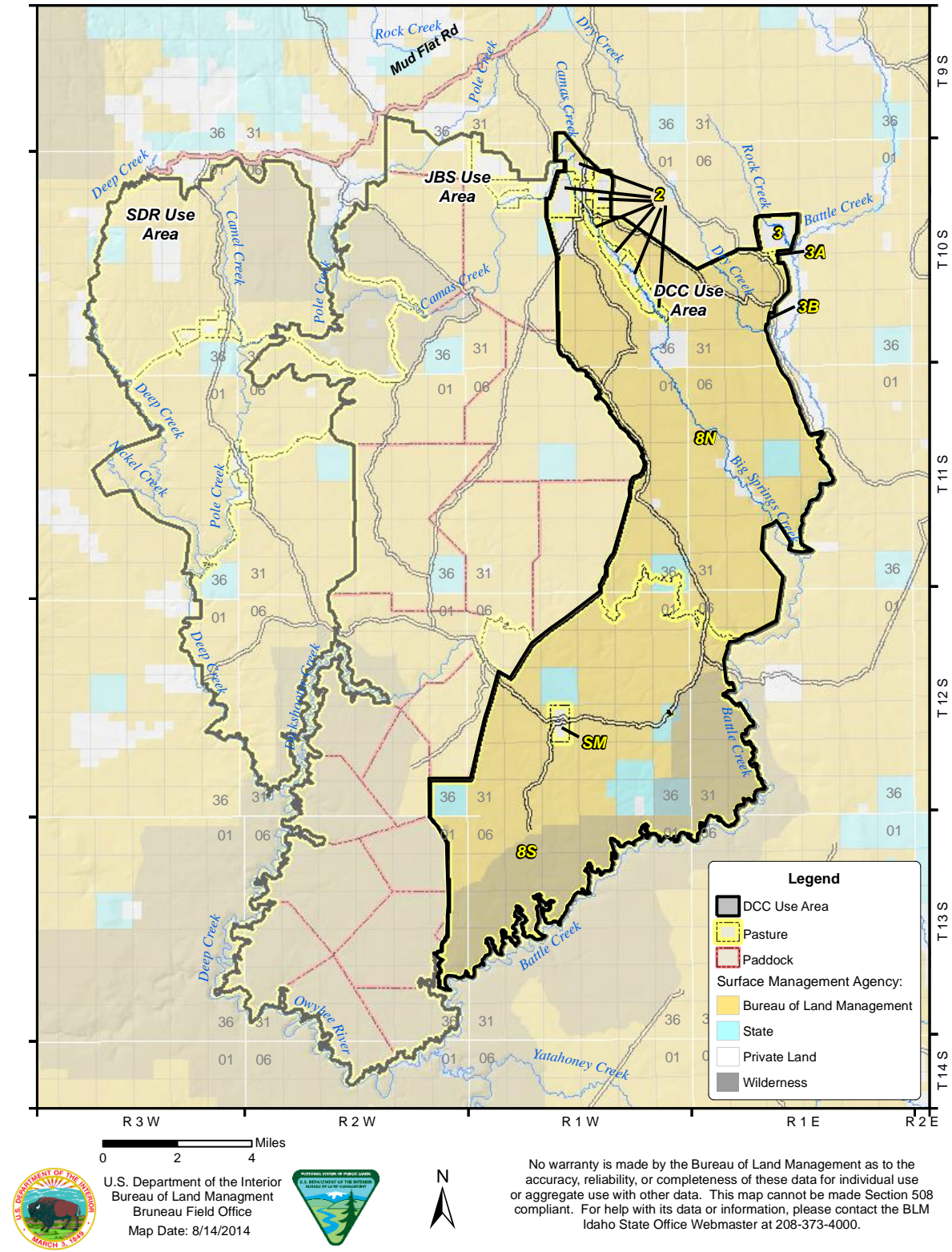


Figure 1. Use Area for Dickshooter Cattle Company (DCC).

Early Summer Use Area (5,600 to 5,980 feet elevation)

In the Early Summer Use Area, the critical growth period occurs slightly later in the growing season. For bluebunch wheatgrass and Idaho fescue it occurs during early to mid-June. Thurber needlegrass is similar to that of Idaho fescue. The critical growth period for squirreltail occurs during late May. The critical growth period for Sandberg bluegrass occurs primarily during May.

The critical growth period for perennial grasses occurs during the late boot (heads showing) stage of development. Grazing during that time potentially has the greatest impact upon vigor and reproduction.

Pasture 8S lies within the Late Spring Use Area and grazing currently occurs during the critical growth period for perennial grasses in most years (no use occurred in 2008 or in 2012). Practically all of Pasture 8N lies within the Early Summer Use Area. Grazing currently begins after the critical growth period for perennial grasses in most years. Regrowth after use is probably very limited in Pasture 8N, and is entirely dependent on the amount and frequency of summer rainfall.

Actual Use

For Pasture 8 as a whole (8N and 8S), the total available AUMs are 11,296 (10,627 for public land and 669 Exchange-of-Use). Nonuse for the DCC Use Area as a whole averaged 7,094 AUMs annually (63% of the total authorization) from 1987 to 2009. Actual/licensed use ranged between 158 AUMs in 1987 to 9,047 AUMs in 1995 (Table 1), and averaged 4,202 AUMs between 1987 and 2009. From 1987 through 1994, when Owens Ranches was the permittee actual/licensed use averaged 3,309 AUMs. From 1995 through 2009, when Dickshooter Cattle Co. was the permittee, actual/licensed use averaged 4,678 AUMs. Most authorized use by Dickshooter Cattle Co. is by cattle; however, a small herd of horses is also licensed in the DCC Use Area at large.

Table 1. Actual/Licensed Livestock Use, Pastures 8N and 8S and the entire use area (8-all), Dickshooter Use Area, Big Springs Allotment.

Pasture	8N			8S			8-all		
Year	AUMs	# Lvst	Use Period	AUMs	# Lvst	Use Period	AUMs	# Lvst	Use Period
1987							158	300	9/15-9/30
1988							2109	400	4/1-8/31
1989							4161	1200	4/16-10/15
1990							5153	1100	3/24-10/31
1991							4763	800	3/25-9/30
1992							2048	959	4/5-7/1
1993							5920	1562	4/16-8/31
1994							2158	588	4/7-7/31
1995							9047	2000	4/1-9/30
1996	4286	2000	6/15-9/15	4079	2000	4/14-6/14	8365	2000	4/10-9/15
1997							7204	2000	4/8-7/30
1998							7481	1962	4/14-8/17
1999							6608	2000	5/6-8/20
2000	1212	1350	7/17-9/7	2724	1200	5/9-7/16	3935	1350	5/9-9/7

Pasture	8N			8S			8-all		
Year	AUMs	# Lvst	Use Period	AUMs	# Lvst	Use Period	AUMs	# Lvst	Use Period
2001							3758	1200	5/24-10/10
2002	2063	1500	10/10-10/28	2763	1500	5/6-6/30	4826	1500	5/6-10/28
2003							1809	500	5/15-9/5
2004							6625	1979	5/4-8/18
2005							2870	1200	5/30-8/11
2006	1545	1210	7/6-8/17	1703	1210	5/25-7/10	3248	1210	5/25-8/17
2007	932	1190	6/12-7/9	979	1190	5/18-6/11	1910	1190	5/18-7/3
2008	763	800	9/15-10/13	0	0		763	800	9/15-10/13
2009	1099	478	6/16-10/10	619	294	5/13-7/15	1718	478	5/13-10/10
2010							1219	400	6/8-9/11
2011	645	400	7/7-8/24	711	400	5/14-7/6	1355	400	5/14-8/24
2012	1073	357	5/1-8/17	0	0		1073	357	5/1-8/17
2013	434	489	7/10-8/5	1079	489	4/20-7/9	1513	489	4/20-8/5
Avg (1987-1994)							3309		
Avg (1995-2013)	1347 ¹			1330 ¹			3993		
Avg (1987-2013)	1751 ¹			1330 ¹			3790		

¹ Average reported for years when detailed data available.

Stocking rates by pasture are not available for most years. The heaviest overall stocking rate for the DCC Use Area during 1987 to 2013 was 7.3 acres/AUM in 1995. Most of the heavier stocking rates are in the 8 to 10 acres/AUM range; the lighter ones are in the 12 to 19 acres/AUM range; and the DCC Use Area was stocked at over 30 acres/AUM in many drought years.

Utilization and Use Pattern Mapping

Pasture 8N (Summer Use)

Use Pattern Mapping is available for Pasture 8N for 2000 and 2005 (Figure 2). Figure 2 reveals that the majority of Pasture 8N consistently receives no use and that cattle concentrate on fine-soiled areas in closed basins, on stream terraces, and on tableland escarpments and adjoining toeslopes. Churning Clay, Clayey, Loamy, Clay Seep, and riparian ecological sites predominate on those preferred portions of the landscape.

Overall utilization in surveyed portions was 10% in 2000. Utilization in 2000 was practically nil over much of the portion of Pasture 8N lying south and west of Big Springs Creek. Small mounds of fine soil and tableland escarpments were used preferentially to large areas of extremely stony intermounds. Use was locally moderate or heavy along fine-soiled portions of drainages, particularly where small wet meadows occur, and in Churning Clay bottoms near scattered reservoirs. Overall utilization in Pasture 8N was 6% in 2005 and showed a similar pattern of use to 2000.

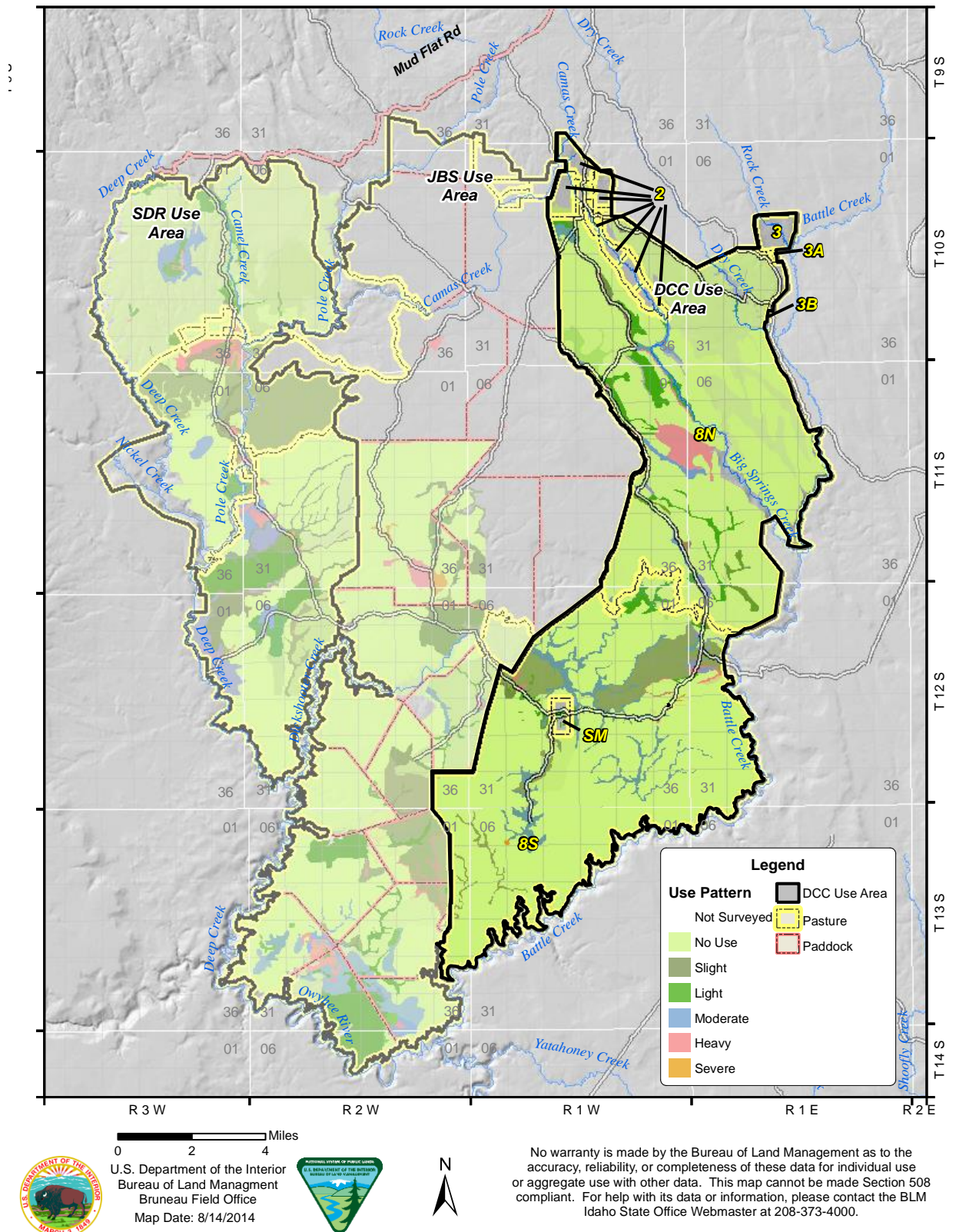
Pasture 8S (Mid-Spring/Early Summer Use)

Figure 2 reveals that the majority of Pasture 8S consistently receives no use and that cattle concentrate on fine-soiled areas on stream terraces, terrace escarpments and on adjoining toeslopes. Loamy, Clayey, and various riparian ecological sites predominate on those portions of the landscape. Mounds of fine soil that support low sagebrush (*Artemisia arbuscula*) and big sagebrush (*Artemisia tridentata*) communities are also preferred by cattle.

In 2000, water was generally available from reservoirs, springs, or intermittent streams. Overall utilization in Pasture 8S was 10% in 2000, but in areas, particularly in stony low sagebrush sites bordering the Owyhee River and Battle Creek canyons, almost no utilization was observed. Within that portion of Pasture 8S, small mounds of fine soil were used preferentially to the predominant intermound areas. Areas of light and moderate use occurred around the Squaw Meadow base property and in and near Frying Pan Basin. Frying Pan Basin has substantial areas of fine-soiled big sagebrush communities on tableland escarpments, fine-soiled alkali sagebrush (*A. longiloba*) communities on toe slopes, and fine-soiled intermittent stream terraces. Wet meadows extend into Pasture 8S from the Squaw Meadow base and are attractive to cattle. Use was also locally heavy along some intermittent drainages near water.

Overall utilization in Pasture 8S was 6% in 2005. Utilization was light in fine-soiled portions of intermittent drainages, including wet meadows and in most big sagebrush communities. Utilization was still locally heavy on wet meadows and moderate in big sagebrush communities near Lower Battle Creek Crossing Reservoir No. 1 and Lower Battle Creek Crossing Waterhole No. 1, respectively.

Pasture 8S was stocked at 19.9 acres/AUM in 2006, and overall utilization in the surveyed portions was 7%. Similar patterns of use as in previous years were observed.



Standard 1: Watersheds

Pasture 8N (Summer Use)

Rangeland Health Evaluation

A total of 14 Rangeland Health Evaluations (RHEs) were completed in Pasture 8N of the DCC Use Area between July 14 and August 5, 2004. Re-evaluations were made in 2012 to determine if any changes to condition had occurred since 2004. Pasture 8N is dominated by Stony Clayey and Clayey ecological sites which differ primarily in the amount of rock contained in soil horizons, and show associated differences in production. Stony Clayey ecological sites also have very stony to extremely stony surfaces which aid in protecting them from disturbance. Churning Clay ecological sites typically occur in association with Clayey sites as inclusions in basin bottoms and along drainages where water accumulates in spring. They are particularly subject to frost heaving and cracking. Loamy inclusions which support big sagebrush communities are found throughout the pasture also, most typically on tableland escarpments.

The 2004 data indicated none to a slight departure as a whole for site stability and watershed function-related Indicators within Pasture 8N (Table 2). The RHEs located on tables and benches showed little departure from reference condition for the indicators. Some Churning Clay and Loamy RHEs exhibited more departure, particularly near water sources. Some (11S01E22, 12S01W03, 10S01E32) were close to reference condition. As presented in the 2011 Assessment, several sites from 2004 were reclassified to a different ecological site because the soil and vegetation components did not conform to the original Ecological Site Description.

Table 2. Summary of upland data collected in Pasture 8N, DCC Use Area, Big Springs Allotment, 2004 with 2012 reevaluation.

Ecological Site	Location	RHE Condition¹ Watershed	RHE Comments
Stony Clayey 12-16	10S01E21	N-S	Soil is stabilized by rock and vegetation. Bare areas are small.
Stony Clayey 12-16	10S01W22	S-M (2004)	Active pedestals and hoof action commonly observed. Some flow paths and cut areas present.
		N-S (2012)	Pedestals common.
Stony Clayey 12-16	11S01W24	S-M	Active and historic pedestals with root exposure. Pondered areas with surface sealing.
Stony Clayey 12-16	11S01W02	N-S	Historic and active pedestals. Soil well armored with gravel and rocks.
Stony Clayey 12-16	11S01E08	N-S	Stable and resistant site.
Stony Clayey 12-16	11S01E22	N-S	Stony stable surface with only small areas of soil loss.
Clayey 12-15	12S01W03	N-S	Pedestals present but mostly historic and colonized by biological soil crust. Few have exposed roots. Historic degradation but currently stable.
Churning Clay 12-16	10S01E30	S-M	Higher than expected bare ground. Flow patterns distinct around shrub mounds, longer than expected. Cut areas observed.
Churning Clay 12-16	10S01W13	S-M	Distinct cut areas and pedestalled grasses.

Ecological Site	Location	RHE Condition ¹ Watershed	RHE Comments
Churning Clay 12-16	10S01W35	S-M	Mechanical damage resulting in pedestals and soil erosion along pronounced flow paths.
Churning Clay 12-16	11S01E09	N-S	Vegetation and scattered stones stabilize soil surface.
Loamy 13-16	12S01E06	S-M	Rare active pedestalling, mechanical damage
Loamy 13-16	10S01E32	N-S	Soil surface stabilized by abundant vegetation and litter cover.
Loamy 13-16	10S01E28	S-M	Evidence of soil loss with pedestalling and flow paths.
¹ N-S = none-slight departure from reference conditions, S-M = slight-moderate departure from reference conditions, M = moderate departure from reference conditions, M-E = moderate-extreme departure from reference conditions.			

A Stony Clayey site was reevaluated in 2012 and showed little departure from reference condition. The reevaluated site showed soil characteristics more typical of a Churning Clay ecological site, but lacked the silver sagebrush and robust bluegrass components expected on that ecological site. Step-point basal cover of bare ground was 32%, with 32% basal cover of bunchgrasses. Although bunchgrasses are typically the largest basal cover component of live vegetation in monitored stands, measured values are generally in the 5-15% range. Biomass of Idaho fescue was much higher in 2012 after several normal or wet years than in 2004 after several successive dry years; with little evidence of the mortality on bunchgrasses that was commonly found in 2004. Pasture 8N has primarily been grazed well after the critical growth period for perennial grasses since 1995.

The dominant indicators of **soil erosion** processes are flow patterns and pedestalled plants (Indicators 2 & 3), indicating that soil loss and surface degradation has occurred in shrub interspaces if present. Shearing and other forms of mechanical damage can also lead to surface sealing and compaction when they occur on wet, clayey soils. The majority of indicators showed slight to moderate departure at most from reference condition. Bare ground showed slight to moderate departure at most from reference condition on all RHEs, with adequate amounts of litter to provide surface protection.

Flow patterns and pedestalled plants are historic except on Loamy RHE 12S01E06, where active erosion processes are rare. That stand is a preferred community and located within ½ mile of a water source. Churning Clay RHEs in basins also showed more departure from reference in 2004, with pronounced and well defined surface flow paths or associated pedestalled plants in shrub interspaces at 2 of 4 RHEs. Individual key Indicators 2 (flow paths) or 3 (pedestalling) were given more of a moderate rating because observers believed that mechanical damage by livestock when wet was accentuating pedestalling and water flow in a few places. However, these stands were judged to be well stabilized by vegetative cover and given overall slight to moderate ratings for watershed attributes.

Soil factors affecting **hydrologic function** are considered adequate if there is good soil structure and sufficient organic matter in surface horizons and desirable shrub, forb, and bunchgrass species occupy the surface; particularly if decreaser bunchgrass species are common in shrub interspaces. Soil factors affecting hydrologic function on most RHEs are adequate. However, the plant community component (Indicator 10) received a moderate departure rating in 2004 because of adverse change to the balance between decreaser and increaser bunchgrass species at Churning Clay RHE 10S01E30 in the northeast portion of Pasture 8N. This stand was originally identified as a Clayey ecological site, with the expectation that Idaho fescue would be dominant in reference condition. That expectation influenced several indicator ratings. However, the stand lacks soil and vegetation characteristics of Clayey sites.

Rangeland Trend

Plant frequency and basal cover data were collected at two long-term trend sites (11S01W02 and 11S01E08) between 1983 and 2012, both located in very stony areas representative of the Stony Clayey 12-16 ecological site. Both are co-located with RHE sites. While increaser grasses are the predominant basal cover, decreaser grasses are also present in expected amounts. A static trend in desirable components is acceptable in stands such as these that have reached their potential composition and cover, although temporal variability may still occur.

Trend data indicated a generally **static** trend in persistent litter, live vegetation basal cover, and basal cover of increaser and decreaser grasses at 11S01W02 between 1983 and 2012 (Figure 3). Bare ground and biological soil crusts (cryptogams) showed a strongly complementary change between 2004 and 2012, possibly reflecting the influence of several normal or wet years.

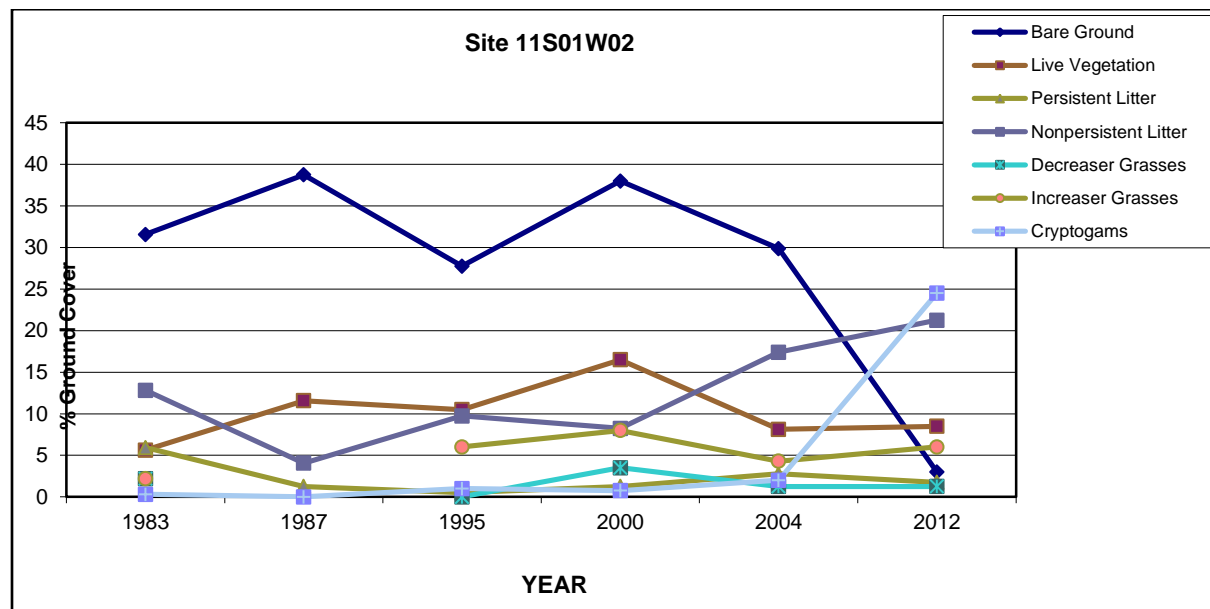


Figure 3. Rangeland trend from 1983 to 2012 at 11S01W02 in Pasture 8N.

Trend data indicated a generally **static** trend in bare ground and basal cover of decreaser grasses at 11S01E08 (Figure 4). Live vegetation, increaser grass basal cover and persistent litter all showed some fluctuation between 1983 and 2012. Live vegetation showed greater basal cover in 1987 than in the other years; and increaser grass basal cover and persistent litter had their lowest values in 1995 after a period of below-normal precipitation during 1987 to 1994. Overall, live vegetation, increaser grass basal cover and persistent litter were all static between 1983 and 2012. Biological soil crusts increased after 2000 and markedly after 2004.

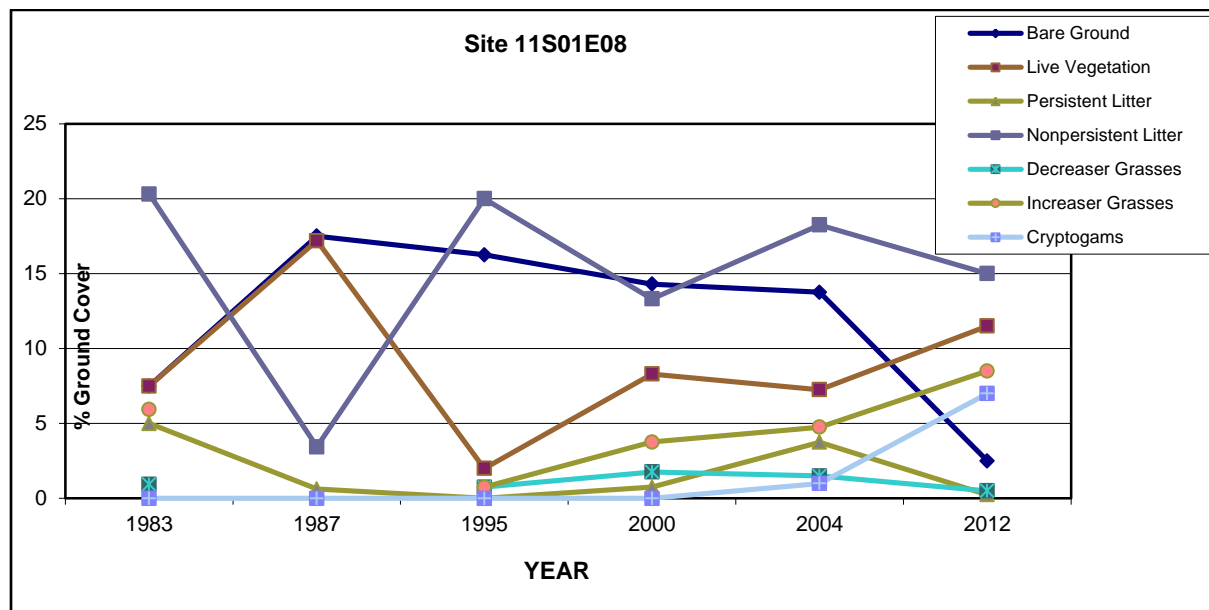


Figure 4. Rangeland trend from 1983 to 2012 at 11S01E08 in Pasture 8N.

There was no correlation between bare ground and non-persistent litter cover during 1983 to 2012 at trend site 11S01E08, but the two were negatively correlated at site 11S01W02. Both sites have a relatively high cover of rock and gravel, although more fine soil is evident at the surface at 11S01W02. Non-persistent litter cover declined during 1983 to 1987, but recovered to its original levels at both locations by 2012.

Pasture 8S (Mid-Spring/Early Summer Use)

Rangeland Health Evaluation

A total of 10 RHEs were completed in Pasture 8S between July 14 and August 5, 2004. Pasture 8S is dominated by Claypan ecological sites, with Loamy inclusions as a minor component of the landscape. Near Fryingpan Basin, a small area of Clayey ecological sites extends below the rimrock that forms the boundary with Pasture 8N. Many Claypan stands have very stony to extremely stony or gravelly surfaces which aid in protecting them from disturbance.

Some Claypan stands have lower production potential (concave intermound), and species typical of shallower and drier sites are more prominent (Sandberg bluegrass, Thurber needlegrass). Convex intermound Claypan stands have slightly deeper soils and support the dominant species from the site guides. Low mound Claypan soils are deeper still, usually support Idaho fescue, and have higher potential production. Loamy inclusions support big sagebrush communities. Water flow or accumulation areas typically have Sandberg bluegrass and oatgrass if too dry to support dependent riparian species.

The 2004 data indicate none to a slight departure as a whole for site stability and watershed function-related Indicators within Pasture 8S (Table 3). Clayey inclusions near Frying Pan Basin showed the most departure from reference condition, while Claypan RHEs in the southern portions of the pasture (mostly on structural benches) showed little departure. Some RHE areas (12S01W33, 12S01W21) were close to reference condition.

One of the Claypan evaluation areas (12S01W28) was reevaluated in 2012, and again showed little departure from reference condition. Biomass, particularly of perennial grasses, was much higher in 2012 after several normal or wet years than in 2004 after several successive dry years, with only slight mortality of bunchgrasses. Pasture 8S is grazed during the critical growth period for perennial grasses, but variation in timing of turnout and stocking rate often reduce the actual level of impacts. Pasture 8S was rested completely in 2008 and 2012 during the evaluation period.

Table 3. Summary of upland data collected in Pasture 8S, DCC Use Area, Big Springs Allotment, 2004.

Ecological Site	Location	RHE Condition ¹ Watershed	RHE Comments
Clayey 12-15	12S01W12	S-M to M	Moderate active pedestalling, flow patterns more numerous than expected, bare ground high, litter and vegetative cover inadequate, physical soil crust and severe pedestalling of plants.
Shallow Claypan 11-13	12S01W23	N-S	Soils are stabilized by rock and vegetation.
Shallow Claypan 11-13	12S01W28	N-S (2004)	Soils are stabilized by rock and vegetation.
		N-S (2012)	Site is overall stable. Pedestalled grasses noted with plant roots exposed.
Shallow Claypan 11-13	12S01W33	N-S	Very stable site with rocky soil surface. Inactive pedestals show evidence of prior water flow.
Shallow Claypan 11-13	13S01W07A	N-S	Soil movement observed along water flow patterns. Some are long but appear stable. Overall rocky stable soil surfaces.
Shallow Claypan 11-13	13S01W07B	N-S	Site is overall stable but pedestals were common and grass roots were exposed.
Shallow Claypan 12-16	12S01W10	S-M	Bare ground is higher than expected due to inadequate grass cover. Some long and connected flow patterns. Root exposure on pedestalled grasses.
Shallow Claypan 12-16	12S01W21	N-S	Some historic soil degradation but currently stabilized by rock and vegetation.
Shallow Claypan 12-16	12S01W32	N-S	Gravel and vegetation cover provide stability except in small areas where pedestals with exposed roots are present.
Shallow Claypan 12-16	13S02W13	N-S	Abundant rock and gravel stabilize soils, pedestals uncommon, occasional flow paths longer than expected.
Shallow Claypan 12-16	13S01W07B	N-S	Rock and gravel stabilize site. Some soil loss associated with pedestalled grasses.
¹ N-S = none-slight departure from reference conditions, S-M = slight-moderate departure from reference conditions, M = moderate departure from reference conditions, M-E = moderate-extreme departure from reference conditions.			

The dominant indicators of **soil erosion** are flow patterns and pedestalled plants (Indicators 2 & 3); both showing, if present, that soil loss and degradation has occurred. These are mostly historic processes in Pasture 8S except on the Clayey stand (12S01W12), where pronounced and well defined surface flow paths were associated with pedestalled plants in shrub interspaces. This stand was originally identified as Shallow Claypan 12-16, which are not water accumulation areas and do not exhibit the seasonal ponding and crusting of the silty surface in reference condition.

The majority of soil erosion indicators at other RHEs in 2004 showed at most slight to moderate departure from reference condition, with adequate amounts of litter to provide surface protection. However, the Clayey RHE has little stone or gravel cover; and litter and vegetative cover were judged

inadequate considering current utilization for soil surface protection in 2004. No recent utilization was noted at the other evaluation areas in Pasture 8S in 2004. Rangeland Health Evaluations are a one-point-in-time judgment, which influence some indicators at the time of evaluation more than others. Even so, differences in current condition were still evident, particularly among evaluation areas in different pastures.

Based on step-point basal cover at the reevaluation area (12S01W28) in 2012 there was 0% bare ground, and 32% live vegetation. Basal cover of gravel and stone are inherently high on this concave intermound stand, which is similar to the two trend studies. While vegetative cover also shows some fluctuation among readings at trend studies, a significant change has longer lasting effects on site protection than short-term fluctuations in the amount of litter or bare ground.

Soil factors affecting **hydrologic function** are considered adequate if there is good soil structure and sufficient organic matter in surface horizons and desirable shrub, forb, and bunchgrass species occupy the surface, particularly if decreaser bunchgrass species are common in shrub interspaces. Soil factors affecting hydrologic function are adequate at most RHE areas within Pasture 8S. However, Indicator 10 at RHE 12S01W12 reflected an imbalance in decreaser and increaser species and fewer decreaser bunchgrasses than expected in shrub interspaces in 2004.

Rangeland Trend

Frequency and basal cover data were collected at two long-term trend sites between 1983 and 2004, and both were co-located with evaluation areas. Study 12S01W23 represents concave intermound Claypan stands, but study 12S01W32 also has interspersed convex intermound Claypan stands that were considered in the evaluation area.

Trend data for 12S01W23 (Figure 5) indicated a generally static trend in live vegetation basal cover, in basal cover of increaser and decreaser grasses and in biological soil crusts between 1983 and 2012. This study site has inherently low bare ground that biocrusts could potentially colonize. Bare ground cover showed some fluctuation, with greater bare ground in 2000 than in the other years; but was static overall, without any clear correlation with growth year precipitation. Persistent litter also showed some fluctuation, but with a static trend overall.

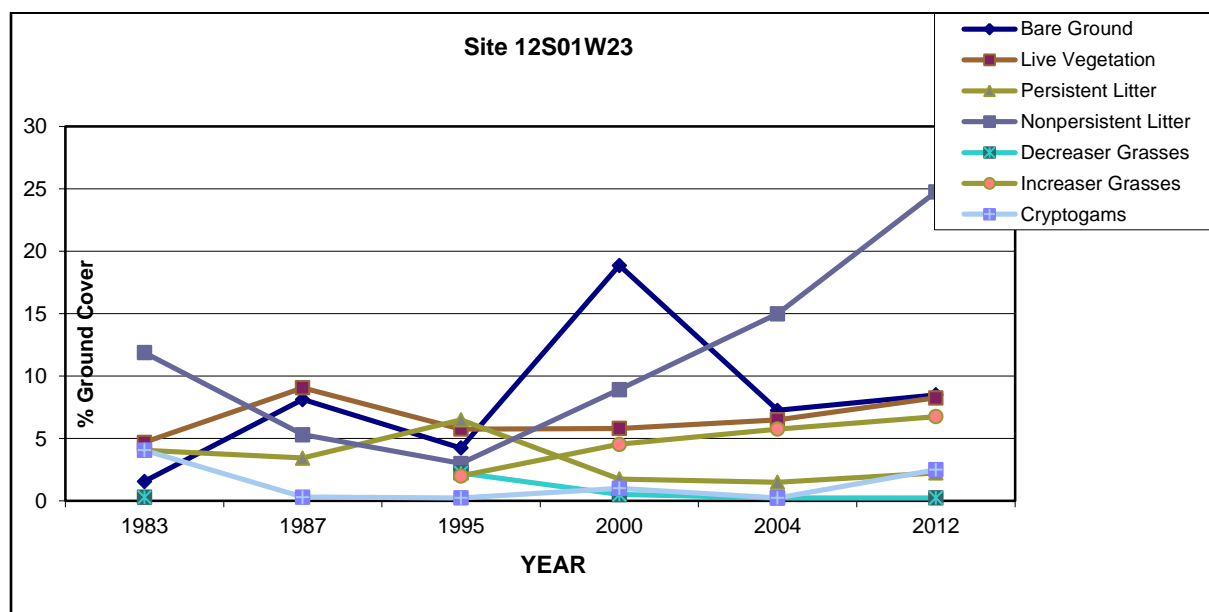


Figure 5. Rangeland trend from 1983 to 2012 at 12S01W23 in Pasture 8S

Trend data for 12S01W32 (Figure 6) indicated a static trend in persistent litter, bare ground, and basal cover of increaser and decreaser grasses between 1983 and 2012. Live vegetation basal cover showed

some fluctuation, with greater basal cover in 1987 than in the other years. However, live vegetation basal cover was also static overall. Bare ground and biological soil crusts showed a strongly complementary change between 2004 and 2012, possibly reflecting the influence of several normal or wet years.

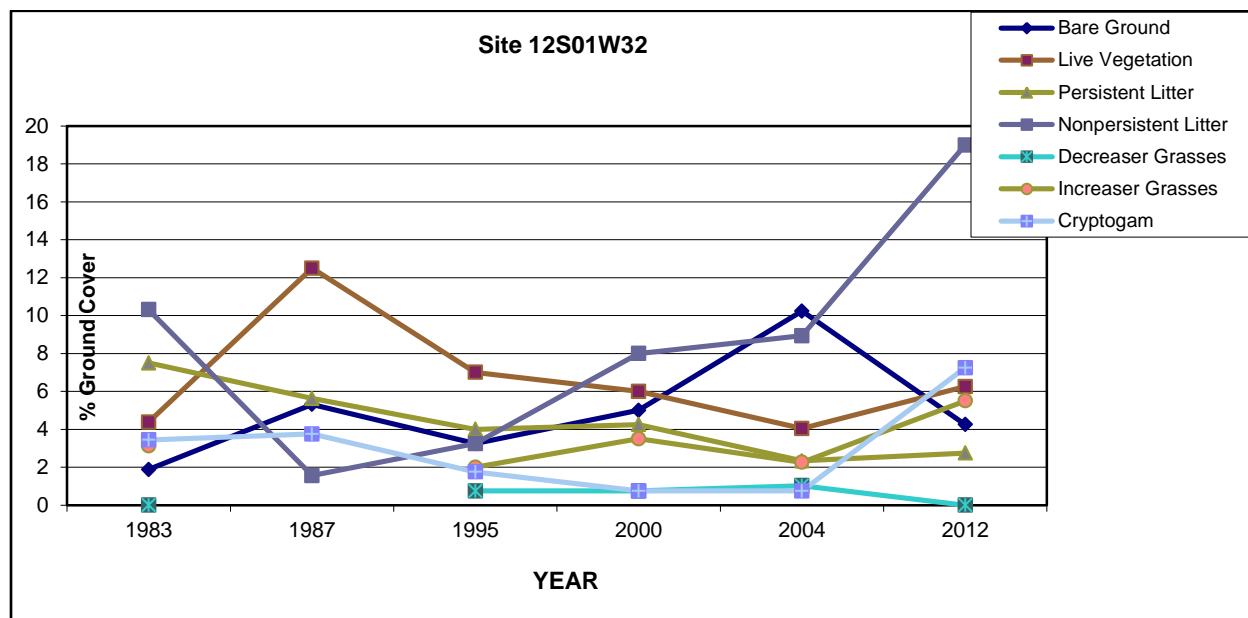


Figure 6. Rangeland trend from 1983 to 2012 at 12S01W32 in Pasture 8S

There was no statistical relationship between bare ground and non-persistent litter cover at either trend site during 1983 to 2012. Both have an inherently high cover of gravel and rock, although more fine soil is evident at the surface at 12S01W32. Non-persistent litter cover declined through 1995 after a period of below-normal crop year precipitation during 1987 through 1994, but recovered to its original level at both by 2004 and continued to increase through 2012 after a period of normal or wet years that extended through 2011.

In addition, a long-term photo plot was monitored for visual evidence of changes in cover and species composition (photo site 13S02W13A), and is located on a low mound within stony intermound areas. Associated trend photos presented in the 2011 Assessment also reflected crown die-off, reduced production, or declining non-persistent litter cover during the period of lower precipitation from 1987 to 1994 and document subsequent fluctuation in cover categories.

Little change is evident between the 2006 and 2012 photos, except possibly some minor turnover in individual Sandberg bluegrass plants. Both were influenced by recent relatively favorable growth years. The photo plot probably represents the potential for the low mound it is located on.

Standards 2, 3, 7 Overview of Riparian Health Evaluations, Trend and Water Quality

Use Area Summary

There was no variance in stream functioning condition ratings between standards 2 (riparian areas and wetlands) and 3 (stream channels/floodplains) on any individually stratified stream segment in the Dickshooter Cattle Company (DCC) use area. Therefore, Table 3 provides a convenient summary of functioning condition for both standards 2 and 3 for all stream segments occurring in pastures 8N and 8S. Components of standard 2 (e.g., vegetation that provides stream shading) and Standard 3 (e.g., streambank stability) directly affect water quality (e.g., water temperature, sedimentation); therefore, standard 7 (Water Quality) is also included in Table 3. Functioning condition ratings of

stratified stream segments, by pasture, are discussed in the Streams section below. Water quality assessments for each stream are discussed below in the Water Quality section.

Table 3. Combined summary of stream functioning condition ratings for Standards 2 and 3, and water quality for Standard 7 in pastures 8N and 8S in the DCC use area, Owyhee County, Idaho.

Stream Name	Flow Regime	Functioning Condition Rating (miles) for Standards 2 & 3			Total	H2O Quality Standards met? (yes/no)
		PFC	FAR	NF		
Battle Creek	P	33.2	0.3	0	33.5	^a no
Big Springs Creek	P	0	5.6	0	5.6	^b no
Dry Creek	A	1.8	0	0	1.8	N/A
Cottonwood Draw	I	0.9	0	0	0.9	
Total stream-miles in allotment (all pastures)		35.9	5.9	0	41.8	
Percent of total		86%	14%	0%	100%	
PFC (proper functioning condition), FAR (functional-at-risk), NF (nonfunctioning condition). Ratings were determined from examination of both riparian and channel/floodplain indicators (TR-1737-15 1998). P = perennial, I = intermittent, A = altered a IDEQ TMDL for temperature b BLM data; no IDEQ TMDL; 303(d) listed N/A= Not applicable. Idaho has no water quality standards for artificial stream flows						

The majority of stream segments (86%) in this use area were in proper functioning condition (PFC), and the remaining segments (14%) were in functioning-at-risk (FAR) condition.

Standard 2: Riparian Areas and Wetlands

Streams

The PFC (proper functioning condition), FAR (functional-at-risk), NF (nonfunctioning condition) Ratings were determined from examination of both riparian and channel/floodplain indicators (TR-1737-16 1999). There are a total of 41.8 miles of streams that were evaluated in the DCC use area.

Pasture 8N (Mid-Spring/Early Summer Use)

In pasture 8N, 15.6 miles of stream were evaluated and included portions of Battle, Big Springs, and Dry creeks (see Figure 7 for stream locations). Stream segments in PFC include 7.9 miles of Battle Creek and 1.8 miles of Dry Creek. The FAR stream segments include 0.3 stream miles of Battle Creek, and 5.6 stream miles of Big Springs Creek (Table 4). In pasture 8S, 25.5 miles of stream were evaluated and all sections were in proper functioning condition.

Stream banks of FAR segments are not adequately vegetated with bank-stabilizing species to resist the erosive forces of high stream flows. In addition, several headcuts are present on Big Springs Creek, both inside, and upstream of the Twin Bridges enclosure. Willow cover is sparse, and willows are not present in suitable sites where they should occur. High levels of utilization on willows and herbaceous plants were observed during PFC assessments upstream of the Twin Bridges Enclosure in stream reaches 1.4 (2007 and 2014), 4.8 (2005), and 6.3 (2005). During the fall of 2014, stubble height data was collected on Big Springs Creek reach 6.3 which showed that the left bank (looking upstream) was dominated by Carex species and had an average stubble height of 6.3 inches. The right bank was a mixture of Carex and Agrostis species with an average stubble height of 5.7 inches.

Table 4. Riparian areas and riparian-wetland functioning condition ratings for Standard 2 by stream segment, Pasture 8N, DCC Use Area, Big Springs Allotment.

Stream segment	Battle 25.4 (Exclosure)	Battle 31.5	Battle 33.6	Big Springs 0.0 (Exclosure)	Big Springs 0.5 (Exclosure)	Big Springs 1.4	Big Springs 4.8	Big Springs 6.3	Dry 0.5	Dry 0.7
Functioning condition*	^a PFC	^a PFC	^a FAR	^b FAR	^b FAR	^b FAR	^a FAR	^a FAR	^a PFC	^a PFC
Stream miles	4.6	3.3	0.3	0.5	1.3	0.5	1.3	2.0	0.2	1.6
PFC (proper functioning condition), FAR (functional-at-risk), NF (nonfunctioning condition).										
^a Data collected in 2005										
^b Data collected in 2012										

Riparian PFC History

Functioning condition assessments were conducted on portions of Battle and Big Springs creeks in 1995 through 2012 (Table 5). Trends in functioning condition indicators were strongly upward on Battle Creek inside the Twin Bridges exclosure. Trend indicators were downward on Big Springs Creek upstream of the Twin Bridges exclosure.

Table 5. Stream functioning condition ratings 1995 to present on Battle and Big Springs creeks, Pasture 8N, DCC Use Area, Big Springs Allotment.

Stream (segments)	Segment Length (miles)	Year	Functioning Condition Rating ^a	Apparent Trend
Battle (25.4 and 28.0 – in Twin Bridges Exclosure)	4.6	1995	FAR	Upward
		1998	FAR-upward	
		1999	PFC	
		2003	PFC	
Battle (31.5 – upstream of exclosure)	3.3	1995	FAR	Upward
		1998	PFC	
		1999	PFC	
		2003	PFC	
Battle (33.6)	0.3	1996	NF	Not Apparent
		2014	FAR; split into two segments, both FAR	
Big Springs (0.0 – in Twin Bridges Exclosure)	0.5	1995	FAR -static	Upward
		1998	FAR - downward	
		1999	FAR - upward	
		2003	FAR - upward	
		2007	FAR - upward	

Stream (segments)	Segment Length (miles)	Year	Functioning Condition Rating ^a	Apparent Trend
Big Spring (0.5 – in Twin Bridges Exclosure)	1.3	1995	FAR - static	Upward
		1998	FAR - downward	
		2007	FAR - upward	
		2012	FAR - upward	
Big Springs (1.4)	0.5	2007	FAR – downward	Downward
		2012	FAR – static	
Big Springs (4.8)	1.3	1998	FAR – downward	Downward
		2003	FAR – downward	Downward
Big Springs (6.3)	2.0	1998	FAR – downward	Downward
		2005	FAR - downward	
Dry Creek (0.5)	.2	1998	PFC	Upward
Dry Creek (0.7)	1.6	1998	PFC	Upward

Riparian Utilization

Utilization of riparian vegetation by livestock was high on accessible segments of Battle and Big Springs creeks in Pasture 8N (Table 6).

Table 6. Median stubble height and percent shrub utilization for streams in Pasture 8N, DCC Use Area, Big Springs Allotment, 1998-2005.

Stream	Site	Date	Median Stubble Height (inches)	Percent Shrub Utilization
Battle (33.6)	11S01E10 SESW	10/18/01	2.5	20-50 ^a
Big Springs (1.4)	11S01E21 SWSW	9/29/98	3.0 ^a	61-80 ^a
Big Springs (4.8)	11S01E07 NWSE	9/16/98	-	61-80 ^a
		10/4/05	-	90-100 ^a
Big Springs (6.3)	11S01E07 SWNW	9/16/98	-	61-80 ^a
		10/4/05	2-3 ^a	
		11/10/2014	6.0	21-40 ^a

^aOcular estimate (BLM 1999).

Battle Creek

Of 8.2-miles of Battle Creek 96% were in PFC. Streamside vegetation was composed of dense and vigorous, yellow, Geyer's, and coyote willows, together with healthy sedges/rushes. Livestock cannot access the majority of the PFC segments.

One 0.3-mile-long FAR segment (segment 33.6) is fully accessible to livestock watering and is a crossing area for cattle from Northwest Allotment when they are moving from federal lands to private ground. This is not an authorized water gap development but has been referred to as a water gap in previous documents. Willow density is reduced here and substrates are coarse, which limits colonization of sedges and rushes. Flows have been modified by upstream diversion of the stream onto private meadows.

In segment 00.0 (21.5-stream-miles), riparian vegetation was dense and healthy; this segment was rated in PFC. The stream flows through a narrow rugged canyon that limits or prevents livestock access. The plant assemblages represent the potential natural vegetation (PNV), which is dominated by willows, dogwood, Wood's rose, and many others. Kelley Park, Freshwater, and Cottonwood draws are also inaccessible to livestock, and are presumed to be in PFC; these intermittent flow regime segments were not inventoried for proper functioning condition due to their extreme terrain.

Big Springs Creek

Big Springs Creek is a tributary to Battle Creek, and flows through the Twin Bridges Enclosure and the central portion of Pasture 8N. The lower 1.8 miles of this stream (segments 00.0 and 00.5) are located in the Twin Bridges Enclosure. That portion of the stream is FAR with an upward trend in the condition for Standard 2. Riparian plant communities generally are dominated by sedges and rushes with willows (primarily *Salix lasiandra* and *S. lutea*) increasing in cover and density. Approximately 0.4-miles of Big Springs Creek within the enclosure was deeply incised during extreme stream flows in 1997 (see Standard 3), and is recovering from the severe impacts of the large watershed event. The 1.1 miles of stream above the headcut remain at-risk of degradation due to the very high probability for the headcut to progress upstream.

Upstream of the enclosure in Pasture 8N, Big Springs Creek is FAR condition with a downward trend (Segments 1.4, 4.8, and 6.3). There is a recently formed active headcut in Segment 1.4. Stream banks are not adequately vegetated with deep-rooted bank-stabilizing species to resist the erosive forces of high stream flows. Bank-stabilizing sedges are common within the wetted width of the stream channel, but are uncommon on most stream banks above the normal low flow level, particularly on the western side of the stream. Riparian plant communities above the wetted channel are dominated by Kentucky bluegrass (*Poa pratensis*) and Baltic rush (*Juncus balticus*), which are disturbance induced species which increase when riparian areas receive high levels of utilization. Willow cover is sparse and young-age classes are rare on these segments, particularly Segment 6.3. Utilization of young-aged willows in Segment 6.3 was severe when measured in the fall of 2005 and in 2006. During the fall of 2014, stubble height data was collected on Big Springs Creek reach 6.3 which showed that the left bank (looking upstream) was dominated by *Carex* species and had an average stubble height of 6.3 inches. The right bank was a mixture of *Carex* and *Agrostis* species with an average stubble height of 5.7 inches.

Dry Creek

In its natural unaltered state, Dry Creek is an entirely intermittent stream, with no potential to support riparian vegetation. However, following construction of Dry Creek Reservoir (date unknown), the duration and volume of stream flow below the reservoir was increased exponentially by the annual release of storage water for irrigation of private lands downstream at Battle Creek Ranch. Over the decades, these "artificial flows" have facilitated development of healthy riparian plant communities. The stream is now vegetated with very dense and robust sedges and rushes (*C. nebrascensis* and *J. balticus*). Willows (*S. lutea*, *S. lasiolepis*, and *S. geyeriana*) comprise about 10% of the vegetative cover. Dry Creek was rated in PFC.

Springs

Two undeveloped springs are located in Pasture 8N (Figure 8), and each support areas of riparian/wetland vegetation (Table 7). Both springs and associated wetlands were in FAR condition; however, most grazing associated damage is confined to the areas around the spring-heads, and is

mostly the result of historic avulsions and headcuts, with the majority of the associated wetlands in the mid to upper range of FAR condition, with an upward trend.

Table 7. Condition of wetland-riparian areas at springs located in Pastures 8N in the DCC Use Area, Big Springs Allotment, 1995-2012.

Spring Name	Location	Functioning Condition	Wetland-Riparian Vegetation/Impacts to Wetland
Unnamed (#1)	10S01E17SE	FAR-	Lack of age diversity of vegetation, high utilization, historic headcuts and bank alteration are present.
Unnamed (#2)	10S01E17 SW	FAR	Site includes 4 closely spaced springs in the headwaters of Big Springs Creek. Approx. 6-wetland-acres are present here. Data from satellite imagery analysis only. Trend is not known.
PFC (proper functioning condition), FAR (functional-at-risk), NF (nonfunctioning condition). Ratings were determined from examination of both riparian and channel/floodplain indicators (TR-1737-16 1999). ^a Data collected in 2005 ^b Data collected in 2012			

One spring (Unnamed #3; 10S01W03NW) is located in Pastures 2, which is primarily located on Dickshooter Cattle Co. private property. It is part of a large spring complex which forms the headwaters of Big Springs Creek. This spring, being located on private property was not assessed for PFC.

Pasture 8S (Mid-Spring/ Early Summer Use)

Streams

All of the stream segments for Battle Creek are in PFC in Pasture 8S (Table 8; see Figure 7 for stream locations). Cottonwood Draw is also rated in PFC. These segments are not accessible to livestock and contain diverse plant communities in near reference condition.

Table 8. Riparian areas and riparian-wetland functioning condition ratings for Standard 2 by stream segment, Pasture 8S DCC Use Area, Big Springs Allotment.

Stream segment	Battle 0.0	Battle 7.8	Battle 12.4	Battle 18.7	Battle 21.0	Cottonwood Draw 0.0
Functioning condition*	^b PFC	^b PFC	^b PFC	^b PFC	^b PFC	^a PFC
Stream miles	8.5	4.7	8.2	2.0	1.9	0.9
PFC (proper functioning condition), FAR (functional-at-risk), NF (nonfunctioning condition). ^a Data collected in 1999 ^b Data collected in 2005						

Springs

Of the nine riparian/wetland areas located at springs, seven are in PFC condition, and two were in FAR condition. Table 9 summarizes the conditions at wetland-riparian areas. Figure 8 shows the locations of these springs.

Nine springs in the DCC use area were last inventoried for proper function condition in August, 2012. Seven springs were found in PFC, and the two remaining springs were in FAR condition due to headcuts and historic and current mechanical disturbance from livestock trampling and shearing of wetland soils. During 2012, the non-developed portions of sites with developments (i.e. water sources) were assessed for proper functioning conditions using protocols recommended by the Idaho BLM State Office. Only spring sources and associated wetlands were assessed and not the development. These water developments were included in our PFC ratings because the spring source and wetlands are also important habitat for other species such as sage-grouse. However, water developments in close proximity to spring sources and are without a fence will likely have greater impacts from grazing than undeveloped springs. As such, they will have different management expectations.

Table 9. Condition of wetland-riparian areas at springs located in Pasture 8S, DCC Use Area, Big Springs Allotment, 2005 & 2012 data.

Spring Name	Location	Functioning Condition	Wetland-Riparian Vegetation/Impacts to Wetland
Kelly Park	13S01W08NE	^b PFC	sedges/grasses/forbs; little utilization of wetland vegetation on 8/14/12; channel incised from historical impacts, however, it is mostly well vegetated and stable.
Unnamed	13S01W05NE	^b PFC	sedges/rushes/grasses/forbs; wetland is densely vegetated.
Unnamed	12S01E07SW	^b PFC	wetland is densely vegetated; spring feeds into reservoir.
Squaw Meadows	12S01W17SW	^b PFC	sedges/rushes/grasses/forbs; <i>developed spring</i> - reservoir at lower end of spring
Unnamed	12S01W13SW_1	^b PFC	sedges/grasses/forbs; dense vegetation cover on 8/15/12; little soil disturbance
Unnamed	12S01W13W_2	^a FAR	sedges/rushes/grasses; pugging, shearing, and compaction of wetland soils
Unnamed	12S01E18SW	^b PFC	sedges/rushes; little utilization of wetland vegetation or soil disturbance on 8/15/12
Unnamed	12S01E18NW	^b FAR	sedges/rushes/forbs/grasses; <i>developed spring</i> with pond excavated in wetland. Road impinging on wetland and bank alteration is present.
Unnamed	11S01W35SE	^b PFC	rushes/sedges/grasses/forbs; Dense vegetation cover with little to no erosion present.
PFC (proper functioning condition), FAR (functional-at-risk), NF (nonfunctioning condition) Ratings were determined from examination of both riparian and channel/floodplain indicators (TR-1737-16 1999).			
^a Data collected in 2005			
^b Data collected in 2012			

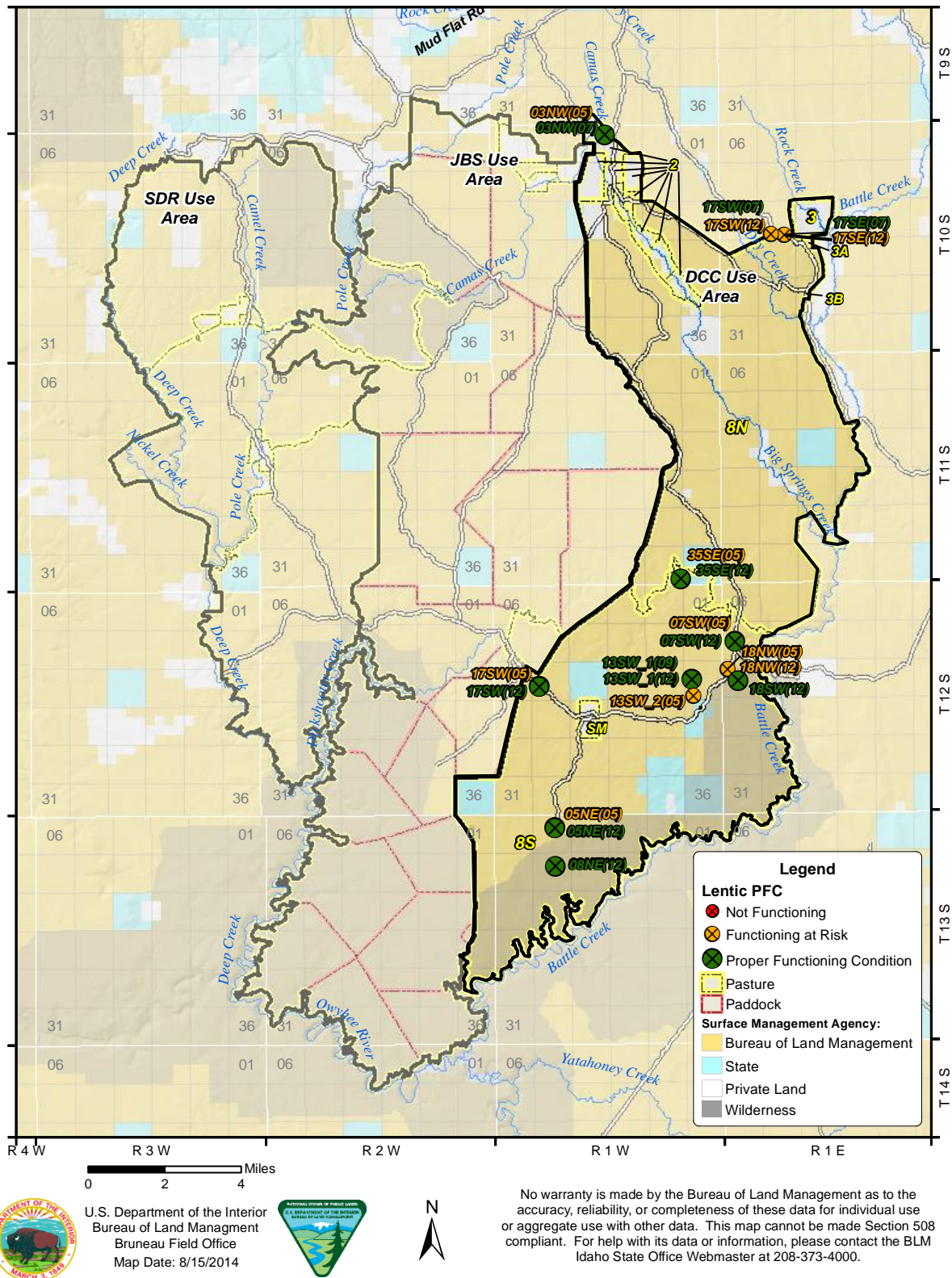


Figure 8. Functioning Condition for Lentic Wetlands in the DCC Use Area.

Standard 3: Stream Channel and Floodplain

The locations of the stream segments are shown on Figure 7, with the labels located at the downstream end of each segment.

Pasture 8N (Summer Use)

There are several stream segments of Battle, Big Springs, and Dry creeks that flow through Pasture 8N (17.1-total stream-miles). Stream segments in PFC condition include 7.9-stream-miles of Battle Creek and 1.8-miles of Dry Creek. Stream segments in FAR condition include 0.3-stream-miles of Battle Creek and 5.6-stream-miles of Big Springs Creek. Table 10 summarizes stream conditions in Pasture 8N.

Of the 17.1 stream miles occurring on three streams located in Pasture 8N, 62% were in PFC, and 38% were FAR. Riparian areas along PFC stream banks have adequate vegetative cover and deep-rooted bank-stabilizing species necessary for maintenance of stable channels and floodplains. On the all FAR segments of Big Springs Creek grazing utilization levels and stream bank disturbance levels were elevated, which has weakened the plant community. Active headcuts are present on several segments of Big Springs Creek. Following passage of the headcuts, riparian vegetation is weakened as the water table is lowered in the formerly wetted stream banks.

Table 10. Riparian areas and riparian-wetland ratings for Standard 3, by discrete stream segment, Pasture 8N, DCC Use Area.

Stream segment	Battle 25.4 (Exclosure)	Battle 31.2	Battle 33.6	Big Springs 0.0 (Exclosure)	Big Springs 0.5 (Exclosure)	Big Springs 1.4	Big Springs 4.8	Dry 0.5	Dry 0.7
Functioning condition*	PFC	PFC	FAR	FAR-↑	FAR-↓	FAR-↓	FAR-↓	PFC	PFC
Stream miles	4.6	3.3	0.3	0.5	1.3	0.5	1.3	0.2	1.6
PFC (proper functioning condition), FAR (functional-at-risk), NF (nonfunctioning condition). Ratings were determined from examination of both riparian vegetation and channel/floodplain indicators. ↑ = upward trend, ↓ = downward trend									

Battle Creek

Battle Creek within the Twin Bridges Exclosure (Battle-25.4) was in PFC. The exclosure was built in 1996, and since then the function condition rating has improved from FAR, to PFC. Riparian vegetation indicators continues to be in a strong upward trend, with channel narrowing and deepening associated with increasing bank stability from robust sedge, rush, and willow communities.

Battle Creek segment 31.2 was in proper functioning condition. Streamside vegetation was composed of dense and vigorous, yellow, Geyer's, and coyote willows, together with healthy sedges/rush communities.

One 0.3-mile-long FAR segment (segment 33.6) is fully accessible to livestock watering and is a crossing area for cattle from Northwest Allotment when they are moving from federal to private ground. This is not an authorized water gap development but has been referred to as a water gap in previous documents. Willow density is reduced, and substrates are coarse, which limits colonization of sedges and rushes. Important historic disturbances affecting riparian vegetation along this segment include flow alteration from upstream water diversion, flow augmentation from construction and operation of Dry Creek Reservoir, historic and current upstream agricultural practices on private land causing periods of increased sediment load.

Big Springs Creek

A large headcut (6-8 feet deep) is present at stream-mile 0.4 on Big Springs Creek, and within the Twin Bridges Exclosure. The headcut was formed when Big Springs Creek incised through a veneer of boulders

and large cobble located on the floodplain surface into an underlying layer of very fine, highly erosive colluvium during a January 1997 rain-on-snow flood event. When first surveyed following the January 1997 watershed event, the newly formed streambed below the headcut was 10.6 feet below the pre-flood streambed elevation (from plane survey data 2007). The headcut is proceeding upstream through unconsolidated colluvium. Even though willows are increasing upstream within the enclosure, they are unlikely to stop the upstream progression of the headcut. The incised channel is being colonized by sedges and willows, but 1.1-miles of stream channel upstream of the headcut are FAR due to the predicted upstream progression of the headcut.

Upstream of the enclosure in Pasture 8N, Big Springs Creek segments are in FAR condition. Stream banks are not adequately vegetated with deep-rooted bank-stabilizing species. In particular, willow cover is lacking, which is a critical component in this stream type necessary to stabilize stream banks, and knit together the surface veneer of boulders and large cobble.

Segment 1.4 has one developing headcut, unstable banks, and lateral erosion. This segment is in FAR condition. Segment 4.8 has four active headcuts, the largest of which is about 3-feet deep. The channel of Segment 6.3 is entrenched about 5-feet-deep from past headcut events, and is at risk of further incision due to the presence of eroding stream banks and floodplains, the lack of willow recruitment, and active headcuts downstream in Segments 4.8 and 1.4.

Dry Creek

The stream channel and floodplain of Dry Creek (1.8-stream-miles) located downstream of Dry Creek Reservoir is in PFC. In an unaltered state, Dry Creek is a fully seasonal/intermittent stream. In addition to a floodplain occupied by dense, deep-rooted, sedge and rush species, the channel and floodplain stability is armored by extensive amounts of rock in the floodplain. The lower 0.2 miles of Dry Creek has an extremely stable channel dominated by cobble substrates. Upstream of Dry Creek Reservoir, a 0.4 mile of section of Dry Creek was not rated due to artificial conditions causing periodic inundation when the reservoir is at full pool.

Pasture 8S (Mid-Spring/Early Summer Use)

Cottonwood Draw

The channel and floodplain of the lower one-mile of Cottonwood Draw is not accessible to livestock, and is in PFC.

Standard 4: Native Plant Communities

Most of the Rangeland Health Evaluation (RHE) sites were near reference condition for native plant communities. Some departure from reference conditions was noted in small portions of pastures 8N and 8S. Twenty four RHEs were conducted in this use area during the 2004 field season. Eighteen of these showed none to a slight degree of departure from reference conditions from those found in reference areas and ecological site guides for similar ecological types. The other six showed a slight to moderate departure. Five RHE sites were close to reference conditions and were used as reference areas during the assessment period. There was no change in native plant community conditions at the 2012 RHE site, originally sampled in 2004.

Areas showing a slight to moderate departure in 2004 are associated with areas of moderate use. For example, the Frying Pan Basin area showed the most departure from reference conditions for the indicators. Most ecological sites have adequate native perennial bunchgrass cover and vigorous and reproductively capable populations of native plant species.

Pasture 8N (Summer Use)

Rangeland Health Evaluation

An ID team sampled 14 locations in this pasture in 2004 and revisited one of those in 2012 for re-sampling. The evaluation areas in this pasture displayed little departure for the native plant community indicators in 2004. Churning Clay and Loamy ecological sites within proximity of water developments exhibited more departure from reference conditions. Some Stony Clayey 12-16 (11S01E22) and Loamy 13-16 (10S01E28) RHEs in Pasture 8N served as reference areas. See Table 11 for details.

Table 11. Summary of upland data collected in Pasture 8N, DCC Use Area, Big Springs Allotment, 2004.

Ecological Site	Location	RHE Condition ¹ Biotic	RHE Comments	NPFT Trend
Stony Clayey 12-16	10S01E21	N-S	Very near reference condition in 2004	No Data
Stony Clayey 12-16	10S01W22 ²	N-S	Bulbous bluegrass in trace amounts. Sagebrush decadent in 2012.	No Data
Stony Clayey 12-16	11S01W24	S-M	Idaho fescue common though below potential; Increaser grasses (squirreltail & Sandberg's) appear dominant.	No Data
Stony Clayey 12-16	11S01W02	N-S	No Data	Static
Stony Clayey 12-16	11S01E08	N-S	No Data	Static to Upward
Stony Clayey 12-16	11S01E22	N-S	Very near reference condition in 2004	No Data
Clayey 12-15	12S01W03	N-S	Very near reference condition in 2004	No Data
Churning Clay 12-16	10S01E30	S-M	Idaho fescue well below potential, decadent shrubs, reduced vigor	No Data
Churning Clay 12-16	10S01W13	S-M	Increase in annual forbs	No Data
Churning Clay 12-16	10S01W35	S-M to N-S	Increase in annual forbs	No Data
Churning Clay 12-16	11S01E09	N-S	No Data	No Data
Loamy 13-16	12S01E06	S-M	Bulbous bluegrass common throughout site, increased sagebrush production, heavy bunchgrass utilization, reduced vigor, reduced reproductive capability, shrub decadence	No Data
Loamy 13-16	10S01E32	N-S	No Data	No Data
Loamy 13-16	10S01E28	N-S	Very near reference condition in 2004	No Data

¹ N-S = none-slight departure from reference conditions, S-M = slight-moderate departure from reference conditions, M = moderate departure from reference conditions, M-E = moderate-extreme departure from reference conditions.
² Site sampled in 2004 and 2012.

Plant Community Integrity

Plant community integrity and native species diversity indicators showed none to a slight departure from reference conditions at most RHEs. The evaluation sites support diverse vegetation communities

with deep-rooted perennial bunchgrass, forb, and shrub components appropriate for each ecological site.

The greatest departure from reference conditions was observed at a Churning Clay RHE site (10S01E30) in the northern portion of the pasture, ½ mile away from two reservoirs. The RHE at this location noted a shift in community composition from decreaser grasses (primarily Idaho fescue) to increaser grasses (in this case Sandberg bluegrass and bottlebrush squirreltail). At this RHE, Idaho fescue occurred in trace amounts, with plants located primarily in rockier areas. Two other Churning Clay RHEs (10S01W35 and 10S01W13) also had a higher departure from reference conditions due to a greater than expected amount of annual forbs present. Community composition was appropriate otherwise and overall those two sites only showed none to slight degree of departure from reference conditions.

Two other exceptions occur in the southern portion of this pasture. These include a Loamy RHE and a Stony Clayey RHE. At the Loamy RHE (12S01E06), decreaser grasses are still dominant, but are below potential. There is also a higher than expected amount of shrubs and invasive species (bulbous bluegrass, *Poa bulbosa*) at this site, which is located ½ mile from a reservoir in a preferred big sagebrush community. It was also noted on the Stony Clayey RHE worksheet (11S01W24) that cattle congregate near drainages and springs in that area. At that location, there is a lower than expected amount of decreaser grasses (Idaho fescue) and a greater than expected amount of increaser grasses (Sandberg bluegrass and bottlebrush squirreltail).

Annual production is within 80% of expected except at two locations. These include the Stony Clayey (11S01W24) RHE, which is slightly reduced due to the aforementioned composition changes; and the Churning Clay (10S01E30) RHE in the northern portion of the pasture which is slightly reduced due to lower than expected sagebrush production.

Shrub productivity overall is similar to reference areas. Exceptions exist at the Churning Clay (10S01W35) and Churning Clay (10S01E30) RHEs in the north, which have a slight decrease in sagebrush; and the Loamy (12S01E06) RHE in the Frying Pan Basin area which has a substantial increase in sagebrush. Leguminous species (lupine, clover, and milkvetch) important for nitrogen fixation were reported at six of the 14 RHEs.

Plant Vigor

Plant vigor varies among locations throughout this pasture. Grass species in the Churning Clay RHEs to the north are vigorous. Plant vigor at the Churning Clay (10S01E30) RHE in the northern portion of this pasture was rated as having a slight to moderate departure from reference conditions due to shrub decadence and low shrub vigor. However, perennial forbs and grasses appear reproductively capable, with adequate seedhead production observed on the grass species.

The three Stony Clayey RHEs located along the western edge of the northern pasture (10S01W22, 11S01W02, and 11S01W24) showed a slight to moderate departure from reference conditions for plant vigor, while the three located along the eastern edge (10S01E21, 11S01E08, 11S01E22) were rated as having none to a slight departure for this indicator. Depressed plant vigor and reproductive capability at all three western RHEs was associated with pedestaling—indicators of soil erosion around plant bases. However, most non-pedestalled grasses at these RHEs were vigorous and reproductively capable.

The Loamy (12S01E06) RHE near the lower pasture fence is in the slight to moderate range for this indicator due to some shrub decadence and decreased vigor of Idaho fescue plants in the shrub interspaces. Idaho fescue plants at this RHE were rarely observed with seedheads. This area had recently been grazed and it was noted that the Idaho fescue plants were heavily grazed in 2004.

Noxious and Invasive Weeds

Noxious weeds were not observed. Overall, invasive plants show none to a slight departure from reference areas. Invasive plants were only observed at two RHEs. Bulbous bluegrass—a shallow-rooted

exotic perennial grass—was scattered in trace amounts at the Stony Clay (10S01W22) RHE in 2004 and 2012 at the northwest portion of the pasture. Presence of this grass was typically associated with disturbed areas, such as burrows. Bulbous bluegrass was more abundant at the Loamy (12S01E06) RHE located near the Lower Battle Creek Crossing Reservoir #2, contributing greatly to the overall slight to moderate departure rating at this RHE.

Rangeland Trend

Site **11S01W02** is located in a Stony Clayey 12-16 ecological site, where Idaho fescue frequency has been static since 1983. Sandberg bluegrass frequency increased from 2004 to 2012, after only minor fluctuations in previous years. Squirreltail and Sandberg's bluegrass both increased from 2004 to 2012. The squirreltail population has been more volatile than Sandberg's bluegrass in the past. Low sagebrush has not been a major component of this plant community and sagebrush frequency has remained static monitoring began. Frequencies of both long-leaf phlox and desert parsley have increased at the site since 2004, following declines in previous years. Photograph monitoring depicts a static trend overall, with some minor changes. Bare ground increased in the photo plot from 2000 to 2004, with a corresponding decrease in surface gravel, suggesting erosion of fine soils from surrounding areas and deposition of fine soil into the photo plot. Although Idaho fescue decreased in the 3'x3' photo plot from 2004 to 2012, Idaho fescue plants are remain visible in recent landscape views the site notes in describe Idaho fescue in fair abundance and good vigor in 2012. Indicators of native plant community health matched, or nearly matched reference conditions at this site in 2004.

Site **11S01E08** is also located in a Stony Clayey 12-16 ecological site. The overall trend at this site has been slightly upward since 1983. Idaho fescue frequency has been on a gradual upward trend, increasing ten to 20 percent since since 1983. Sandberg's bluegrass frequency—having increased the same amount since 1995—appears to be increasing more rapidly than Idaho fescue. Squirreltail frequency has been recovering upward since 1995, following a steep decline. Overall, squirreltail frequency is up 20 percent since 1995 and now sits somewhere between 1983 and 1987 levels. Oatgrass has remained static at the site following an increase of between 20 to 30 percent in 1995. Low sagebrush frequency has decreased five to ten percent since 1995, following a similar increase from 1983 to 1995. Sagebrush frequency now matches 1983 and 1987 frequencies. Longleaf phlox frequency has been volatile since 1983, it has remained static since 2004. Desert parsley, on the other hand, has increased steadily at the site since 1987. Desert parsley frequency has increased by 22 to 40 percent since 1987. Given the recruitment of both decreaser grasses and increaser grasses within the photo plot, trend was static to upward for grasses. Onespoke oatgrass (increaser) is moving into the photo plot, which is supported by the trend data presented above. Idaho fescue (decreaser) is also increasing in the photo plot. Based upon the photos, trend appeared to be static for shrubs between 1983 and 2000 which is consistent with the frequency data above. Indicators of native plant community conditions nearly matched reference conditions at this site during a 2004 RHE.

Pasture 8S (Mid-Spring/Early Summer Use)

Rangeland Health Evaluation

An interdisciplinary team sampled indicators of native plant community health at ten locations in this pasture in 2004 and revisited one of those in 2012 for re-sampling. Most RHEs showed little departure for the native plant community indicators (Table 12). The Frying Pan Basin area showed the most departure from reference conditions for the indicators, while RHEs in the southern portions of the pasture were generally at or near reference conditions. Some RHEs (12S01W33, 12S01W21, and 12S01W32) served as reference areas.

Table 12. Summary of upland native plant community data collected in Pasture 8S, DCC Use Area, Big Springs Allotment, 2004-2012.

Ecological Site	Location	RHE Condition ¹ Biotic	RHE Comments	NPFT Trend	Photo Trend	
					grasses	shrubs

Ecological Site	Location	RHE Condition ¹ Biotic	RHE Comments	NPFT Trend	Photo Trend	
					grasses	shrubs
Clayey 12-15	12S01W12	S-M	Substantial cattle use, moderate reduction in vegetative cover, reduced bunchgrass vigor and reproductive capability, some bunchgrass root exposure	No Data	No Data	No Data
Shallow Claypan 11-13	12S01W23	N-S	Bulbous bluegrass scattered; deep-rooted bunchgrasses slightly under represented	Slightly Downward	static	static
Shallow Claypan 11-13	12S01W28 ²	N-S	Near reference conditions	No Data	No Data	No Data
Shallow Claypan 11-13	12S01W33	N-S	Near reference conditions	No Data	No Data	No Data
Shallow Claypan 11-13	13S01W07A	N-S	Reference conditions.	No Data	No Data	No Data
Shallow Claypan 11-13	13S01W07B	N-S	Near reference condition	No Data	No Data	No Data
Shallow Claypan 12-16	12S01W10	S-M to N-S	Minor shift in functional/structural groups from deep-rooted bunchgrasses to sagebrush	No Data	No Data	No Data
Shallow Claypan 12-16	12S01W21	N-S	Near reference conditions	No Data	No Data	No Data
Shallow Claypan 12-16	12S01W32	N-S	No Data	Static	Downward	Upward
Shallow Claypan 12-16	13S02W13	N-S	Near reference conditions	No Data	No Data	No Data
Shallow Claypan 12-16	13S02W13A	No Data	No Data	No Data	Upward	Static
¹ N-S = none-slight departure from reference conditions, S-M = slight-moderate departure from reference conditions, M = moderate departure from reference conditions, M-E = moderate-extreme departure from reference conditions. ² Site sampled in 2004 and 2012. No changes in biotic conditions were apparent between sample years.						

Plant Community Integrity

Plant community integrity and native species diversity indicators showed none to a slight departure from reference conditions, with most RHEs appearing to have desirable bunchgrass species colonizing the sites, particularly in the interspatial areas. In general, except for the Clayey RHE, species diversity nearly matches potential, and native bunchgrasses are dominant and occupy the interspaces.

The major exception is the Clayey RHE (12S01W12) in the Frying Pan Basin area of this pasture, where native perennial bunchgrasses (Idaho fescue) are still the dominant component, but slightly below

potential; the site exhibits a moderate reduction in vegetative cover overall. Cattle were in this pasture at the time of the Evaluation and it was noted on the RHE worksheet that this area receives substantial use.

Annual production in this pasture is within 80% of expected except at RHE 12S01W12, which appears to have slightly lower than expected production due to the aforementioned composition changes. Overall shrub productivity is similar to reference areas. Leguminous species (lupine and milkvetch) important for nitrogen fixation were reported at six of the ten RHEs.

Plant Vigor

Overall, plant vigor shows none to a slight degree of departure from reference conditions. However, at the Clayey RHE (12S01W12) near Frying Pan Basin, there is a moderate departure from reference conditions. Pedestalled grasses were more common than expected, and exposed roots were observed. Both pedestalled and non-pedestalled grasses exhibited reduced vigor, seedhead production and reproductive capability. With the exception of that RHE (12S01W12), grass species in this pasture are vigorous, with adequate seedhead production.

Noxious and Invasive Weeds

Noxious weeds were not observed. Invasive plants were noted in two locations. Bulbous bluegrass was scattered in the middle of this pasture on claypan sites east of the private ranch (12S01W23). Bulbous bluegrass was common in northern areas of the pasture, near the Frying Pan Basin area (12S01W12).

Rangeland Trend

Three trend studies are established in the pasture. Two of the three trend studies established in the pasture include frequency data, cover data, and repeated photograph plots. The other trend study is simply a repeated photograph study for apparent trend

Site 12S01W23 is located in a Shallow Claypan 11-13 ecological site. Overall trend at this site has been slightly downward. Abundant surface and sub-surface rock and gravels characterize this site, which resides on a concave landform. Soils in the area form a complex of mounds and inter-mounds with slightly different amounts of water available for plant growth in the soil profiles. Needlegrass frequency has decreased since 1983, declining approximately ten percent from 1995 to 2004. Sandberg's bluegrass frequency declined ten percent between 2004 and 2012, to match levels recorded in the 1980s. The trend for squirreltail has been upward since 1995, as that species appears to have recovered from a downward trend prior to 1995. Oatgrass frequency has been static at the site following a substantial increase from 1995 to 2000. That increase followed a 15 percent decline in oatgrass from 1987 to 1995. Low sagebrush has been declining at the site since its peak in 1987. By 2012, live sagebrush had decreased by more than half of the 1987 record. Longleaf phlox has been highly variable but its recovery from steep declines in the early 1990s appears to have ended. By 2012, longleaf phlox frequency was comparable to 2004 readings. Desert parsley on the other hand, has been increasing steadily since 1995 and its 2012 reading was nearly twice that of 2000

Overall appearance of the site from photograph monitoring appears to be static since 2004, though some variation is evident in the past. Plant community condition appears to have declined from 1987 to 1995. The 1995 photographs show depressed vigor and relatively low production. By 2004, the plant community had recovered and appears vigorous. Oatgrass and Sandberg's bluegrass increased in the photo plot since 1995. Although sagebrush is no longer visible in the 3'x3' photo plot of 2012, landscape views depict a healthy stand of sagebrush in 2012. Bulbous bluegrass was scattered in the photo plot in 2012 and the RHE also described scattered amounts of bulbous bluegrass.

Trend site 12S01W32 is located in Claypan 12-16 ecological site positioned on a convex intermound area. Trend data suggest an overall static trend at this site. Sandberg bluegrass is the dominant plant species on this site, which has shallower soils than the adjacent RHE. The trend site is also located within the major key use area for cattle in Pasture 8S because of the proximity of an access road and of water

sources in Kelly Park Draw. A slight upward trend in needlegrass is apparent since 1995. Idaho fescue meanwhile has declined to below ten percent after reaching a peak of approximately 30 percent in 1995. Sandberg's bluegrass frequency has increased five to ten percent since 2004. Sandberg bluegrass showed a pattern of decline and recovery that may be related to fluctuating growth conditions between 1983 and 2004. Squirreltail has partially recovered from a 60 percent decline in the early 1990s and has remained static since, though 2012 readings were nowhere near 1987 readings. Although its long-term trend has been very slightly upward since 1983, oatgrass remains a relatively small component of the community. Low sagebrush frequency has declined by approximately 20 to 30 percent since 1995. Like the other trend site in this pasture, sagebrush frequency has decreased by more than half. Longleaf phlox frequency has declined recently. The 2012 reading was half that of the 2000 peak. Prior to that, phlox had been static. Desert parsley frequency has tripled since 1987. Idaho fescue communities on the adjacent RHE were near reference condition in 2004.

Photo trend was downward for decreaser (Idaho fescue) and increaser grasses and upward for shrubs within the photo plot between 1983 and 2012. Vigor appeared low and utilization appeared heavy on both increaser and decreaser grasses in 1983; an Idaho fescue plant present in the photo plot in 1983 was gone by 1995. By 2012, Idaho fescue had not returned to the 3'x3' photo plot. Sandberg's bluegrass has been the predominant species visible in photos during that entire period; these plants displayed prominent pedestalling. Despite declining frequency measurements, shrubs appear taller and more vigorous in the 2012 photos than earlier shots. Sagebrush recruitment is apparent in the 3'x3' photo plot. Utilization on Sandberg bluegrass was heavy on this site in 2000.

Photo Plots/ View Photos

An additional photo site (13S02W13A) is also located in pasture 8S; and is paired with a similar one immediately across the division fence with the Joseph Black & Sons Use Area. Both were established immediately after completion of the fence. This photo plot is far from water sources, and receives almost no livestock use. No quantitative trend data were collected at either site. The nearby Rangeland Health Evaluation indicated none to a slight departure from reference conditions near this photo site.

At this low mound Shallow Claypan 12-16 (13S02W13A) photo site, trend within the photo plot was downward for decreaser bunchgrasses (Idaho fescue) and static to upward for shrubs between 1986 and 2004. Complete crown die-off of most Idaho fescue plants was observed within the photo plot between 1987 and 1991, with no evidence of livestock use in any of the photos. Surviving portions of Idaho fescue plants recovered their vigor between 1995 and 2004. By 2012, the recovery was even more apparent. Decreasers grass cover has continued to increase since 1991. Bluebunch wheatgrass and Idaho fescue were visible in 2012.

Standard 7: Water Quality

Beneficial Use Support and TMDLs

The Idaho Department of Environmental Quality (IDEQ) evaluated the beneficial use support status of four assessment units (groups of streams) within the Dickshooter Use Area (Table 13). Three assessment units are not supporting the cold water aquatic life use (CWAL). In addition to the beneficial uses listed, all waters are assumed to support agriculture, industrial water supply, wildlife habitats and aesthetics.

Table 13. Designated and existing beneficial use support status (IDEQ 2003, 2004a).

Name (Assessment Unit)	CWAL	SS	PCR	SCR
Battle Creek -4 th order-source to mouth (ID17050104SW023_04)	Not Supporting(1)	Not Supporting(2)	Fully(1)	Fully(2)
Battle Creek-3 rd order-source to mouth (ID17050104SW023_03)	Not Supporting(1)	Not Supporting(2)	Fully(1)	Fully(2)

Name (Assessment Unit)	CWAL	SS	PCR	SCR
Battle Creek -2 nd order-source to mouth (ID17050104SW023_02)	Not Supporting(1)	Not Supporting(2)	Fully(1)	Fully(2)
Big Springs Creek-1 st and 2 nd order (ID17050104SW025_02)	Fully(1)	---	---	---
Big Springs Creek-3 rd order (ID17050104SW025_03)	---	---	---	---
Dry Creek – 1 st and 2 nd order (17050104SW024_02)	---	---	---	---
CWAL=Cold Water Aquatic Life; SS=Salmonid Spawning; PCR=Primary Contact Recreation; SCR=Secondary Contact Recreation. (1) IDEQ 2004b; (2) IDEQ 2003; --- Not Assessed				

IDEQ conducted a Subbasin Assessment and Total Maximum Daily Load (TMDL) analysis for Battle Creek, which is the only 303(d) listed stream segment in the Upper Owyhee River watershed that is located in the DCC Use Area (IDEQ 2003). IDEQ then developed TMDL actions for three assessment units of Battle Creek (Table 14).

Table 14. Total Maximum Daily Load (TMDL) Actions (IDEQ 2003).

Name (Assessment Unit)	TMDL Action
Battle Creek -4 th order-source to mouth (ID17050104SW023_04)	De-list for bacteria; Add to 303(d) list for temperature
Battle Creek -2 nd order-source to mouth (ID17050104SW023_02)	De-list for bacteria; Add to 303(d) list for temperature
Battle Creek-3 rd order-source to mouth (ID17050104SW023_03)	De-list for bacteria; Add to 303(d) list for temperature

Water Temperature

IDEQ's Upper Owyhee Subbasin Assessment and TMDL (2012) process generally addressed only those streams that were identified on 303(d) listings. The beneficial use support status in Table 15 is based on IDEQ's analysis of water temperature data from various sources.

BLM monitored the water temperature of seven stream segments in the DCC Use Area of the Big Springs Allotment (Table 15). Water temperature data were evaluated following IDEQ's 10% exceedance policy and the temperature exemption.

Table 15. Stream temperature monitoring of streams in the DCC Use Area of Big Springs Allotment (Battle Creek and tributaries).

Stream	Dates Sampled	Max T (°C)	Max Avg T (°C)	CWAL	SS
Big Springs Creek (Mile 0.1 ; Elev 5426')	6/21-7/11/98	25.3	21.7	NS	ND

Stream	Dates Sampled	Max T (°C)	Max Avg T (°C)	CWAL	SS
(Mile 0.2 ; Elev 5439')	7/14-10/10/99	25.0	21.5	NS	ND
	7/11-9/07/00	28.1	22.7	NS	ND
Battle Creek (Mile 25.2 ; Elev 5339')	7/14-9/15/99	24.1	21.5	NS	ND
(Mile 25.6 ; Elev 5340')	7/12-9/26/95	26.0	22.6	NS	ND
(Mile 34.2 ; Elev 5434')	6/11-9/29/97	25.6	21.4	NS	ND
(Mile 38.4 ; Elev 5690')	7/08-9/28/98	29.6	24.7	NS	ND
Dry Creek (Mile 2.5; Elev 5813')	7/03/05	19.2 *	---	FS	ND
CWAL=Cold Water Aquatic Life (water temp. = 22° C or less, with a maximum daily average of < 19° C); SS=Salmonid Spawning (water temp. = 13° C or less, with a maximum daily average of < 9° C) FS=Fully Supports beneficial use; NS=Does Not Fully Support beneficial use; ND=No Data * = instantaneous grab temperature at reservoir outlet --- = No data or not measured					

The amount of stream channel shading provided by topography (i.e., canyon walls) and vegetation is important in regulating the amount of direct solar radiation that reaches the water surface. While topography generally remains constant, activities that occur in and near the riparian areas may affect the amount and type of vegetation. The potential or capability for a stream system to support riparian shrubs and trees depends on the stream type (gradient, stream bed and bank materials, valley bottom width, flow regime, etc.) and landscape setting. In general 60-80% stream shading is needed to comply with water temperature standards, but specific shade targets will differ by stream.

Shade measurements were taken at seven discrete sites on streams in the Dickshooter Use Area (Table 16). BLM data were measured with a solar pathfinder and IDEQ data were collected with a spherical densiometer. The solar pathfinder data represent the average daily shade for July (typically the hottest month), while the densiometer readings represent a point-in-time measurement.

Table 16. Stream shade monitoring on streams in the DCC Use Area, Big Springs Allotment.

Stream	Date	Shade (%)	Stream Type	Agency
Battle Creek (BATTL23.7) (Mile 24.3; Elev 5325')	6/28/95	11	---	BLM
Battle Creek (BATTL25.4) (Mile 25.7; Elev 5349')	6/28/95	10	---	BLM
Battle Creek (BATTL25.4B) (Mile 26.5; Elev 5357')	6/29/95	16	---	BLM
Battle Creek (BATTL28.0) (Mile 28.2; Elev 5403')	6/29/95	05	---	BLM

Stream	Date	Shade (%)	Stream Type	Agency
Battle Creek (BATT131.5) (Mile 38.0; Elev 5686')	6/27/95	08	---	BLM
Big Springs Creek (1999SBOIA016) (Mile 4.8; Elev 5650)	7/28/99	00	B	IDEQ
Dry Creek (1999SBOIA015) (Mile 1.6; Elev 5784')	7/27/99	00	C	IDEQ
Stream Type = Rosgen Stream Classification Level I (Rosgen 1996) --- No data or not measured				

Fecal Coliform

The current maximum standard for primary contact recreation beneficial use designation is 406 *Escherichia coli* (*E. coli*) organisms/100 ml for a single sample and 576 *E. coli* organisms/100 ml for a single sample for secondary recreational contact (IDAPA 58.01.02). Table 16 summarizes BLM monitoring for coliform bacteria. Historical analyses reported only fecal coliform and total coliform counts, rather than *E. coli*. *E. coli* are one type of fecal coliform bacteria and the data presented in Table 17 include *E. coli*, but the laboratory analyses at the time did not differentiate organisms because the water quality standard was for fecal coliform only (for primary contact recreation the standard was 500 colonies/100 ml and for secondary contact recreation the water quality standard was 800 fecal coliform colonies/100 ml).

Table 17. Coliform bacteria analyses from streams in the DCC Use Area, Big Springs Allotment.

Stream	Date	Total Coliform	Fecal Coliform
Big Springs Creek (BSPRI)	7/29/97	---	1100
(Mile 0.0; Elev 5427')	6/17/98	---	9
--- = No data or not measured			

Sediment

Water quality criteria for sediment are determined on a case-by-case basis (IDAPA 58.01.02.250.05). In the absence of specific criteria, sediment shall not exceed quantities that impair designated uses. IDEQ 2004b contains substrate data for IDEQ Beneficial Use Reconnaissance Protocol (BURP) sites.

Standard 8: Habitat for Special Status Species

Wildlife

The majority of this use area is comprised of low sagebrush/bunchgrass communities with scattered linear-shaped stands of big sagebrush/bunchgrass communities at the base of low mesas. Overall upland conditions in this use area are good with the majority of the RHE sites characterized as near reference condition (see Standard 4). Some exceptions exist where moderate cattle use was found, such as a few sites proximate to water developments in Pasture 8N and Frying Pan Basin in Pasture 8S.

Streams and wetlands in this use area are also in generally good condition (see Standard 2), providing good wildlife habitat. Roughly two-thirds of the streams were rated as PFC in Pasture 8N. Likewise, streams in Pasture 8S and seven of the nine springs found on public land were rated as PFC. The other springs in these pastures rated as FAR. Streams that showed room for improvement included portions of

Big Springs Creek above the Twin Bridges Exclosure and a section of Battle Creek below private land, both of which are in, or adjacent to, Pasture 8N.

Sage-Grouse

The Dickshooter Use Area is an especially important late brood-rearing area for sage-grouse in the area and likely provides nesting habitat, even though much of the uplands are dominated with low sagebrush. This area contains one occupied sage-grouse lek and is within three miles of 11 others (IDFG 2013). Telemetry data collected by IDFG and BLM also shows a high concentration of late summer and fall use by sage-grouse, especially in Pasture 8N. Overall, this use area is an important resource for sage-grouse in the Bruneau Field Office. Figure 9 depicts conditions measured at various locations for sage-grouse across the use area.

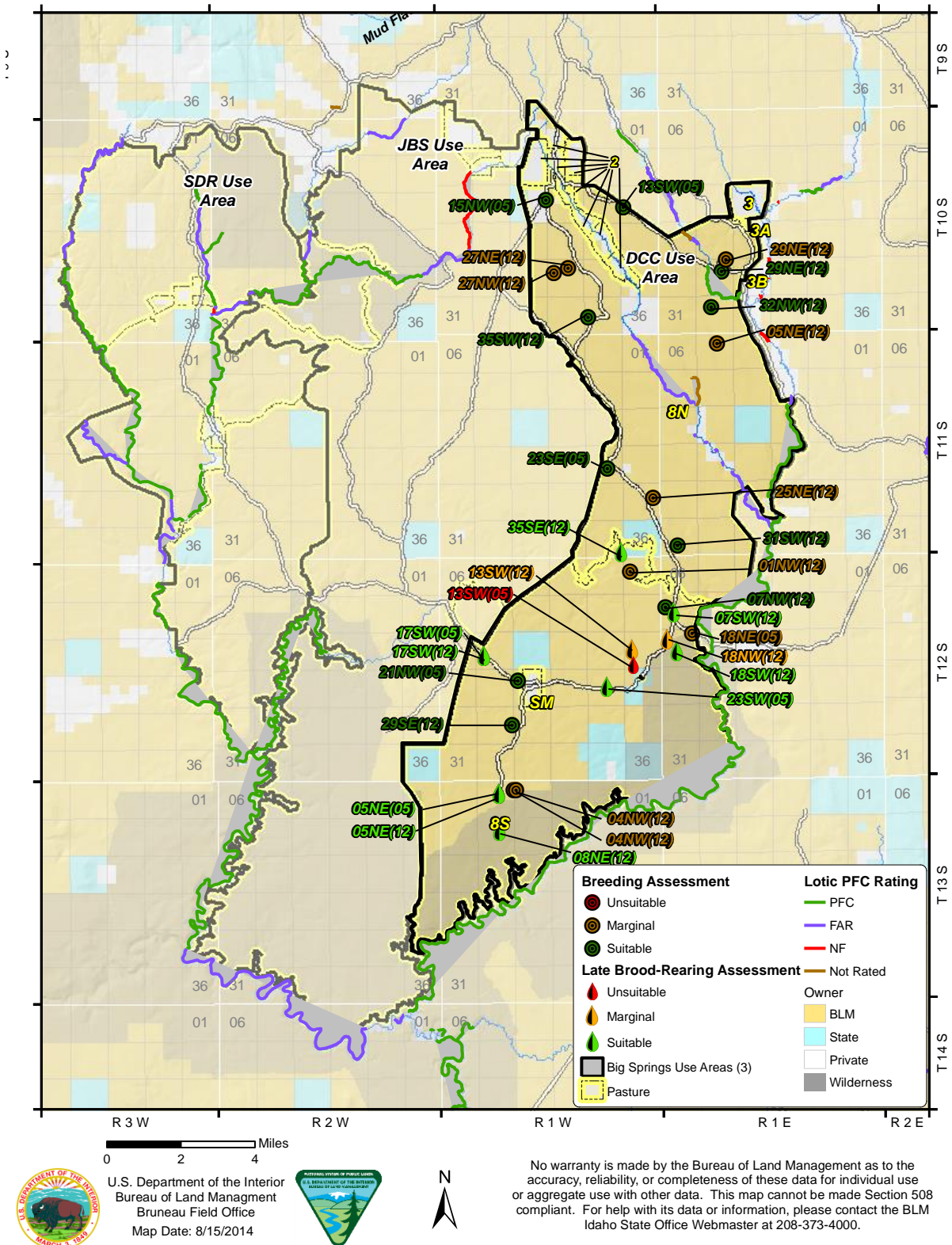


Figure 9. Sage-grouse data for the DCC Use Area.

Pasture 8N (Mid-Spring/Early Summer Use)

Pasture 8N includes forb-rich, seasonally wet meadows adjacent to strips of big sagebrush under low mesa rims. This configuration is an excellent habitat combination for sage-grouse. These meadows and big sagebrush stringers are generally in good condition, with varied forbs and vigorous grasses (See Figure 10). Meadows in this pasture are used extensively by sage-grouse.



Figure 10. Wet meadow area, Pasture 8N, October 4, 2005

Riparian areas that are degraded include Big Springs Creek above Twin Bridges (4.2 miles) and a short section of Battle Creek (0.3 miles) upstream of Big Springs Creek and downstream of private land. Big Springs Creek below the Big Springs Ranch is downcut up to 6 feet through a broad flat that is over one mile long (Fig. 11). This flat could be wet meadow if the creek aggraded, and could provide some of the finest sage-grouse brood rearing habitat in Owyhee County. Currently, the banks are vegetated with sedges, but the benches just back from the water support bluegrass. Use levels are generally high, but the sedges at the water's edge regrow after use to almost full height (see Standard 2). The section of Battle Creek below the private land is rated Functioning at Risk and receives high levels of livestock use.



Figure 11. Big Springs Creek, Pasture 8N, October 4, 2005

Upland communities in Pasture 8N are in good habitat condition (Table 18), having appropriate amounts of native plants. Long strips of mountain big sagebrush under rims (e.g., along the east side of Big Springs Butte) contain abundant grass and forb cover for nesting grouse and the adjacent low sagebrush contains a diverse and abundant forb component. Nesting habitat in the strips of big sagebrush is in good condition because sagebrush, grass and forb cover is high. Multiple nesting assessments were also conducted in low sagebrush sites because of the dominance of this cover type and evidence that sage-grouse also nest in low sagebrush (Musil 2011). Ratings at these sites were held to the criteria established for big sagebrush sites so even though most of these areas were in excellent condition, ratings were often skewed downward.

Pasture 8S (Summer Use)

Pasture 8S is comprised of shallow drainages such as the upper reaches of Dickshooter Creek, which support narrow, seasonally wet meadows that stay green sometimes through late summer. Other late brood-rearing habitat in this pasture includes springs and wetlands, which are in generally good condition (Table 18). Of the 10 sites evaluated for late brood-rearing conditions for sage-grouse (all in Pasture 8S), seven rated suitable, two rated marginal, and one rated unsuitable. Two of these were evaluated in 2005 and again re-sampled in 2012, both with the same rating outcomes. After cattle use Pasture 8S in the spring, plants regrow and conditions are generally suitable, with stabilizing vegetation of rushes and other graminoids.

Upland communities in Pasture 8 are also in good habitat condition (Table 18) except for Frying Pan Basin where cover from grasses is low (see Standard 4). As in Pasture 8N, long strips of mountain big sage under rims are in good condition with abundant grass and forb cover for nesting grouse.

Table 18. Sage-Grouse Habitat Assessments for Dickshooter Cattle Company Use Area in Big Springs Allotment, 2005 and/or 2012.

Pasture	Site Name	2005 Rating	2012 Rating	Vegetation	Season	Rationale for Ratings and Comments
8N	11S1W23SE	S	---	Mtn big sagebrush	Breeding	Excellent grass cover, forbs available in adjacent low sagebrush, representative of long strip of big sage below rim of Big Springs Butte.
	11S1W25NE	---	M	Low sagebrush	Breeding	Rocky low sagebrush site with big sagebrush 300-m away, good forb diversity and abundance; sagebrush cover and height are primary reasons why not rated as 'suitable'
	11S1E5NE	---	M	Low sagebrush	Breeding	Rocky low sagebrush site with big sagebrush nearby under rim
	11S1E31SW	---	S	Low sagebrush	Breeding	Good forb diversity and abundance, less rocky than typical low sagebrush site which is likely responsible for suitable height and cover
	10S1W13SW	S	---	Mtn big sagebrush	Breeding	Good grass cover and forbs though grasses in interspaces are smaller than under cover of shrubs. Patch of big sagebrush in landscape of low sage.
	10S1W15NW	S	---	Mtn big sagebrush	Breeding	Generally lots of grass cover and forbs abundant both in big sagebrush and low sagebrush adjacent. Strip of big sagebrush in landscape of low sagebrush.
	10S1W27NE	---	M	Low sagebrush	Breeding	Abundant forb diversity and abundance but shrub and grass cover is marginal
	10S1W27NW	---	M	Low sagebrush	Breeding	Abundant forb diversity and abundance but shrub cover is lacking
	10S1W35SW	---	S	Mtn big sagebrush	Breeding	High shrub cover but is one of few linear big sagebrush strips found at base of small cliffy features within landscape of low sagebrush, forbs diverse and abundant
	10S1E29NE	---	M	Low sagebrush	Breeding	Excellent condition site with high forb diversity but vegetation height and cover at this rocky site is marginal
	10S1E29NE	---	S	Low sagebrush	Breeding	Good grass and sagebrush cover for low sagebrush site, forbs abundant and big sagebrush and bitterbrush nearby
	10S1E32NW	---	S	Silver	Breeding	Site within slight depression is less rocky

				sagebrush		and contains more cover than surrounding area, forbs are abundant and shrub height slightly lower than 'suitable' but site would provide overall good conditions for nesting grouse
8S	13S1W5NE	S	S	Wet meadow at spring	LBR	Minor erosion, forbs abundant, sage-grouse nearby
	13S1W8NE	---	S	Wet meadow at spring	LBR	Succulent forbs abundant, sage-grouse nearby
	12S1W13SW	U	---	Wet meadow at spring	LBR	Minor erosion, forbs limited, xeric plants in center of meadow
	12S1W13SW	---	M	Wet meadow at spring	LBR	Intact substrate but forbs are rare, sage-grouse nearby
	12S1W17SW	S	S	Wet meadow	LBR	Old headcut has lowered water table; minor erosion, forbs limited, but wetland plants dominate and big sagebrush cover is adjacent.
	12S1W23SW	S	---	Riparian area-wet meadow	LBR	Dickshooter Creek: stably vegetated, adequate forbs, sage-grouse present
	12S1E18SW	---	S	Wet meadow at spring	LBR	Minor erosion, forbs abundant but diversity is low, sage-grouse sign abundant
	12S1E18NW	---	M	Wet meadow at spring	LBR	Some erosion, forbs present but diversity low
	12S1E7SW	---	S	Wet meadow at spring	LBR	Forbs are not diverse but those present are common, site in good condition, sage-grouse sign abundant, reservoir downhill of spring at site
	11S1W35SE	---	S	Wet meadow at spring	LBR	No erosion, forbs common but diversity is low
	13S1W4NW	---	M	Low & Mtn big sagebrush	Breeding	Rating of two adjacent transects, one each of low and big sagebrush sites; landscape is primarily low sagebrush with scattered big sagebrush pockets; forb abundance and diversity is moderate
	12S1W1NW	---	M	Low & Mtn big sagebrush	Breeding	Site characterized by 70% big and 30% low sagebrush to capture variable landscape; forb diversity is moderate but abundance of most are sparse
	12S1W21NW	S	---	Mtn big sagebrush	Breeding	Small areas of big sagebrush in landscape of low sagebrush; mostly <i>Poa</i> understory but cover is adequate, forbs good in

						adjacent low sagebrush areas
	12S1W29SE	---	S	Mtn big sagebrush	Breeding	Big sagebrush pocket within matrix of low and scattered big sagebrush; moderate forb diversity with good abundance
	12S1E7NW	---	S	Low & big sagebrush	Breeding	Big and low sagebrush pocket within matrix of low and scattered big sagebrush; good forb diversity and abundance
	12S1E18NE	M	---	Wyo big sagebrush	Breeding	One of few patches of big sagebrush in landscape of low sagebrush; trailing area from Lower Battle Creek Crossing so grasses are used
S = Suitable, M = Marginal, U=Unsuitable						

Columbia Spotted Frog

Columbia spotted frogs have been recorded in Dry Creek, Rock Creek, and Battle Creek, all of which are in Pasture 8N of the Dickshooter Use Area (IFWIS 2013). As mentioned in the sage-grouse section, the 0.3 mile section of Battle Creek below private land rates FAR and exhibits heavy livestock use (see Figure 9). Spotted frog locations along Dry Creek are in an area that has not been characterized for PFC and the sites along Rock Creek are on private land. Other streams or spring areas in the use area may contain spotted frogs but slow moving streams that are persistent throughout most of the year are limited to the ones mentioned with observations, as well as Big Springs Creek. Since PFC ratings are roughly associated with habitat condition, many of the streams rated as PFC provide suitable conditions for spotted frogs if other habitat requirements are present. Streams exhibiting FAR or below characteristics (e.g. short section of Battle Creek below private land) either prevent use by spotted frogs or could provide better habitat for this species.

Pygmy Rabbit

Pygmy rabbits have only been documented in Pasture 8N but have been surveyed for in both pastures of this use area. Analyses of pygmy rabbit detections relative to Ecological Site Description (ESD; NRCS 2012, unpublished draft) showed a logical association of locations with four ESD types. These ESD types represent roughly 5,100 acres (<10% of use area) in the Dickshooter Use Area and were used as a model for potential pygmy rabbit habitat in this assessment (Fig. 12). The ESD types correlate roughly with the stringers of big sagebrush, where the soil is deeper compared to the majority of the low sagebrush habitat found in the use area. Pygmy rabbits need deep, loamy soils for burrowing. Accordingly, surveys of stringers of big sagebrush in this use area resulted in detections of pygmy rabbit occupancy. These areas are less abundant in Pasture 8S so pygmy rabbit occupancy in this pasture is expected to be lower or absent. Since upland vegetation conditions are good in much of the use area, conditions for pygmy rabbits in the limited areas they can inhabit are generally suitable in this use area.

Bighorn Sheep

Bighorn sheep habitat overlaps with the southern half of Pasture 8S north of Battle Creek (Fig. 12). Although the overlap is roughly 22,100 acres, bighorn sheep concentrate near the Battle Creek canyon area so use is not evenly distributed within the delineated habitat. Habitat quality and quantity in the BFO does not appear to be the limiting factor for bighorn sheep since they graze on steeper slopes than cattle, so only localized competition with cattle for forage is possible where cattle can access canyon areas (IDFG 2011). The Owyhee River Population Management Unit, in which the Dickshooter Use Area resides, has exhibited stable bighorn sheep numbers between 250-350 animals since 2006. Upland

conditions are good in Pasture 8S where bighorn reside in this use area and much of the area is in the Owyhee River Wilderness so human disturbance is very low.

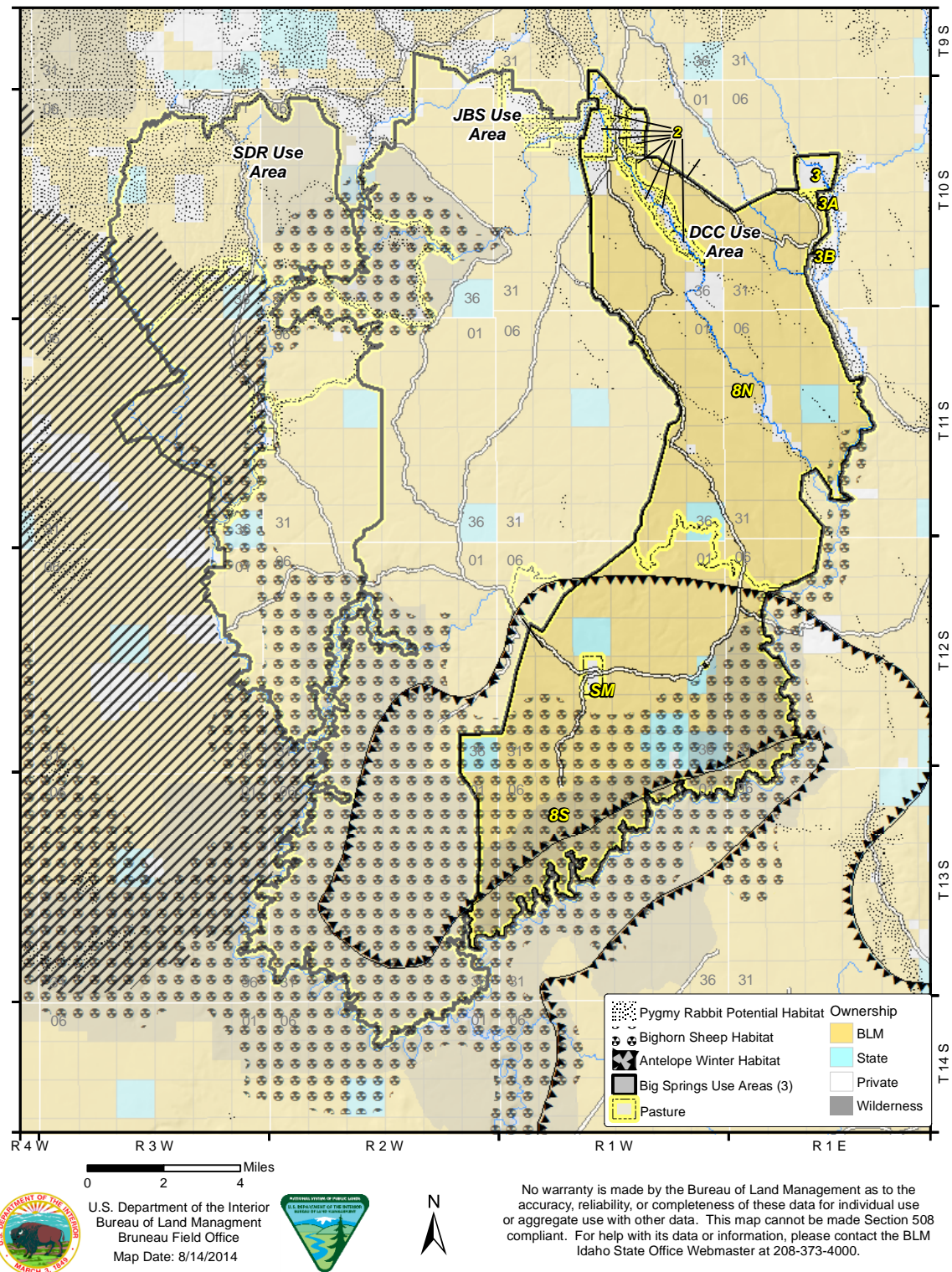


Figure 12. Wildlife (except sage-grouse) data for the DCC Use Area

Pronghorn Antelope and Mule Deer

Antelope are affected by disturbance and the quality and quantity of their habitat via fire, livestock grazing, or low precipitation, especially through impacts to the forb component (IDFG 2009). However, deer are more affected by predation and over-winter malnourishment (IDFG 2007b). This use area does coincide with winter range for antelope (Fig. 12). However, upland vegetation in this use area is in good condition so neither mule deer or antelope experience habitat limitations derived from anthropogenic causes.

Fish

Redband trout inhabit the headwaters of Big Springs Creek on private lands upstream of Pasture 8N. Trout have not been documented in portions of Big Springs Creek located on public lands in Pasture 8N. Redband trout may be limited in their distribution to headwater springs because of irrigation practices on private land which elevates water temperatures in Big Springs Creek. Water temperatures are also encumbered by a lack of willow cover on public land portions of Big Springs Creek. Vegetation conditions along Big Springs Creek are shown in Figures 13-15. Redband trout are not known to currently inhabit Battle Creek in the Dickshooter Use Area.



Figure 13. View upstream on Big Springs Creek (Segment 6.3), showing opposite bank vegetated with sedges and near bank dominated by early seral grasses and rushes, 21 October, 1999.



Figure 14. Same view on 4 October 2005. Near bank still dominated by grasses and rushes. Note residual stubble height of vegetation outside of wetted channel (median of about 2.5 inches).



Figure 15. Upstream view of Big Springs Creek (Segment 6.3) in Pasture 8N showing historically incised channel and high use of riparian vegetation on 4 October 2005.

Plants

There is one special status plant known to occur in the Dickshooter Cattle Co. Use Area. This species, Bach's downingia (*Downingia bacigalupii*), is currently listed as a Type 4 BLM Sensitive species (Table 19). Two populations of this plant have been located in Pasture 8N. Currently, no special status plants are known from Pasture 8S.

Bach's downingia is an annual species typically found in drying mud of vernal pools, lakes, wet meadows, and streambanks. It has also been found in man-made structures such as reservoirs, roadsides and irrigation ditches. The first population identified in this pasture was located in 1999 in a vernal pool depression along an intermittent drainage. Numerous plants were found fruiting in the vernal pool but the plants did not occupy the entire potential habitat. Mechanical damage was noted as a potential threat to this population. In 2005, only one plant was located at that site. Heavy mechanical damage was observed around the small ponded area.

A new population was located nearby at the South Big Springs Reservoir (Figure 16) during 2009. Twenty-five plants were found in this heavily pugged water source. Population vigor was poor given the amount of potential habitat. Most wetland vegetation was restricted to the interior inaccessible portion of the pond, and invasive and noxious weeds such as ventenata grass (*Ventenata dubia*) and Canada thistle (*Cirsium arvense*), respectively, were present on the pond berm.

Rangeland health assessments in the vicinity of the two populations showed slight to moderate departures from reference conditions for plant vigor. Reduced plant vigor in the adjacent uplands was attributed to active and historic pedestalling of plants which reduced vigor and reproductive capability.

Table 19. Special Status Plants Known to Occur in the DCC Use Area, with species descriptions and a summary of the impacts to each population.

Species	Pasture	Habitat	Status	# of Populations	Summary of Conditions
Bach's downingia	8N	Drying mud of vernal pools, muddy lake margins, wet meadows, roadsides, irrigation ditches, and stream banks.	BLM Sensitive, Type 4	2	<p>#1. 1999-approximately 30 to 50 plants along intermittent drainage, numerous in fruit, threats include habitat degradation and mechanical damage. 2005-heavy mechanical damage around ponded area, only one plant found; not accessed in 2009.</p> <p>#2. Discovered in 2009 at South Big Springs Reservoir. 25 Plants in flower and fruit. Heavy use and deep pugging of soils. Habitat in very poor condition for species persistence.</p>

These two populations are part of a larger metapopulation in the Big Springs allotment with eight additional populations in the adjacent Use Area (JB&S Use Area). If these two populations are placed in context with the other eight they would rank on the lower end for overall habitat condition and population vigor.



Figure 16. Population #2 of Bach's downingia at South Big Springs Reservoir.